

SPRING 2009

archives

# Harvard Medical

ALUMNI BULLETIN





If you want to be happy,  
resolutely turn the spot-  
light off yourself. Forget  
your own self-importance,  
your aches and pains, your  
feelings and fears. Instead,  
get busy. The world is wide  
and fascinating, and it  
needs your participation.

—Michael Crichton '69





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JUL 08 2009

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The cover photoillustration by Stephen Webster features the 1978 movie *Coma*, based on a novel by a former faculty member of Harvard Medical School, Robin Cook, and directed by an alumnus, Michael Crichton.

## In This Issue

**H**ARVARD HAS ITS HISTORIC STREAK. THE HASTY PUDDING CLUB, HOME OF drag theatricals and currently Hollywood's most durable and publicized fan club, was founded only a dozen years after Harvard Medical School. The School's Second Year Show has been running since 1907, and the tradition has outlasted much of what was taught in the classrooms and clinics of that era. For that matter, the Second Year Show is older than Hollywood, which hosted its first movie production in 1910.

None of this would lead me to say that Harvard has anything more than its first and last letters in common with Hollywood, except that it does—if only for its keen sense of the value of branding. Given their shared dramatic traditions and mastery of publicity, it is hardly surprising that the two institutions have developed a symbiosis. In “Hollywood, the dream factory,” as anthropologist Hortense Powdermaker called the American movie business, Harvard has a rather special role.

Real HMS alumni do not have much of an on-screen presence—except for the long-running cast of NOVA's documentary series that began with “Can We Make a Better Doctor?” in 1988. Mostly, our screen graduates are fictional, and any resemblance to persons living or dead is purely coincidental. One living alumna, however, came very close to being resembled, not at all coincidentally, in a television series whose pilot was filmed but not aired, and she tells the story in this issue.

Harvard graduates with diplomas do go to Hollywood, however, as writers for and consultants to the industry's many doctor dramas. To say that there are “droves” of HMS alumni in Tinseltown may be a shade expansive, but “pack” or “pride” seems fair enough. Many of the medical series of the past 20 years have drawn on the experience and skill of an HMS alumnus or faculty member, most notably *ER*, which was conceived by the late Michael Crichton '69 soon after he graduated, although it didn't debut until 1994. In this issue, we offer a sampling of the ways that HMS doctors have participated in what Hortense Powdermaker called the “mass production of prefabricated daydreams.”

*William Ira Bennett*

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"Now is the time for the Harvard Medical School family to get on board the good ship Federman and set course to a brighter future."

JAMES S. BERNSTEIN '52



## All Aboard

A hearty welcome to the search Daniel Federman '53 conducted in the Spring 2008 issue of the *Bulletin*, using a nautical metaphor, for a system of universal health care that has long been in place in every other developed country. Actually, we may be closer to Dan's "clear sailing" than his metaphor suggests. Two major initiatives will be crucial to the success of national health insurance.

First, for-profit insurance companies must get out of health care. Hundreds of billions would be saved, as their overhead of 25 to 30 percent could be reduced to Medicare's efficient 2 to 3 percent. No more advertising. No more administrative efforts to reduce benefits, and no more profit. Medicare for all is the aim of the United States National Health Insurance Act, or H.R. 676, which has more than 60 cosponsors in the U.S. House of Representatives. Dan doesn't have to look far for first-rate scholars and advocates for such a solution. Several are HMS faculty members.

Second, for national health insurance to succeed, we must bolster primary care, which has been attracting fewer young physicians every year. In successful systems around the world, two-thirds of doctors are in primary care. In this country, the ratio is less than one-third. Specialty care, with its emphasis on diagnostic and therapeutic procedures, is inherently expensive. This is partly why the United States spends twice as much per capita as other countries. To make primary care more attractive, Drs. Arnold Relman and Marcia Angell have called for a major overhaul of physician reimbursement.

While the *Bulletin* has visited the issue in articles and letters since 1999, the gap between outstanding care at great centers like Harvard and the diminishing number of people it reaches has become more and more unacceptable. Now is the time for the Harvard Medical School family to get on board the good ship Federman and set course to a brighter future.

JAMES S. BERNSTEIN '52  
NEW YORK, NEW YORK

## Navigational Aids

Daniel Federman's thoughtful and cogent piece about the problems facing medicine makes a strong case that HMS students and graduates should be agents for change in reforming our present dysfunctional health care system. Indeed, a number of HMS graduates, such as Donald Berwick '72, have played prominent roles in this area, despite its overall dominance by lobbyists, health economists, and large corporate health care purchasers.

Dr. Federman's proposal to apply the standards of medical education to the problems of health care needs to be put into context, however. Any change in our health care system will, of necessity, involve government participation and action to a major extent. As someone who spent eight years working full-time in the U.S. Senate on health issues, I can attest that the concepts of logic and evidence that dominate medical education are generally subordinate factors—and sometimes only minor annoyances—in a world of government policy in which political agendas and personal relationships reign supreme. Our future agents of change must be specifically taught how to operate in this very different world if they want to succeed; "evidence-based politics" is a wish for the future, if not an outright oxymoron.

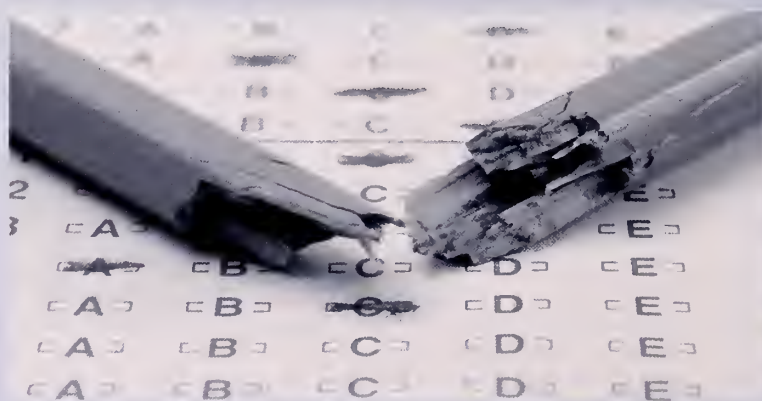
Similarly, HMS graduates must practice medicine in a world where, at least for the foreseeable future, the rules that govern such practice are not set by HMS. In particular, Dr. Federman's admonition that HMS graduates should "change the world" if they are unable to practice as they were taught seems a bit glib. Until the HMS agents of change can succeed, the School's graduates will be carrying out their profession in a world where non-physicians decide what constitutes performance in a world increasingly dominated by pay for performance; where others determine how physicians should balance dedication to the individual patient with a need to husband limited medical resources; in short, where the

## SHELF EXAM

*In this poem, I offer a reaction to what appears to be our pernicious and inexorable slide toward judgment of each other and our students through multiple choice exams.*

1. A doubtful man, bemused by paper-green pictures of presidents (metal coins are more convincing), has job and car and house and wife fading toward transparency. He can feed:
  - a. the diabetes and the cat
  - b. the copay and the cold pain
  - c. Timmy's faded teachers
  - d. tides of tax
  - e. none
  
2. A doubtful doc reaches each station asymptotically—almost, nearly—but never, in these winding days, the tight fit of ligand and ligandee. A foot pointed where. His jagged REM is colored by:
  - a. paper people and carnal lab slips
  - b. a beeper at an orgasm
  - c. the electronic medical rectum
  - d. wrong third-grade answer recalled
  - e. no one
  
3. A doubtful copy of the educator class, crazed quantifiliac, lately cloning influence to see if the number of numbers will surpass the macro-electronic storage crates. Escaping enumeration is (are):
  - a. mother's heartcramps
  - b. the stars in disguise
  - c. primes between ten and a lot
  - d. the shelf in the self
  - e. not one

EDWARD R. WOLPOW '63  
BROOKLINE, MASSACHUSETTS



rules of the game are not set by the players. HMS has an obligation to teach its students how to practice the art and craft of medicine successfully within the confines of a health care system that is ultimately designed by the citizenry at large and not just by physicians.

To extend Dr. Federman's sailing metaphor, no amount of maneuvering will help you navigate well in the dark of night through a channel loaded with mines unless you have the proper equipment and maps. It is the obligation of HMS to make sure its graduates know how to find and use the tools they will need to complete their journeys successfully.

ALLAN R. GLASS '71  
BETHESDA, MARYLAND

## Transcript of Events

I enjoyed very much reading the letter Massad Joseph '77 wrote in the Spring 2008 issue in which he recounts a boycott by the Class of 1977 protesting a grading system with more categories than the pass or fail we had been expecting. I was troubled to realize, though, that I had no recollection of a pass/fail system, a boycott, or Dean Robert Ebert's warning that we were all easily replaceable if we dared execute a protest.

I do remember, however, that our class, much to the chagrin of this then-poor boy, refused to accept stethoscopes from a pharmaceutical company (I believe it was Eli Lilly) in an advanced statement of protest against the pharmaceutical industry (of which I subsequently became and remain a member). I also was perplexed as to how we could have created a system whereby each student was assigned a number, how we recruited a faculty member to assist us in these endeavors, and whether any student actually, as part of the proposed honor system, turned himself or herself in as a "failee" of the physiology course. Last, wouldn't such a system have required 100-percent participation and how would a boycotter of the boycott have been treated?



I scurried to my files and found my four-year transcript, which, in black on white, provided several clues suggesting that Massad was mistaken. The transcript contained a legend at the bottom with the categories of E (excellent), S (satisfactory) and U (unsatisfactory). My grades fell into three categories: S, E, and "-". Fortunately I didn't receive any grades of U, though one might argue that I might have during my psychiatry rotation, as the residents and attending criticized me for refusing to accept the teachings of Freud. What, though, did the "-" represent?

I do recall that our class was either the first or one of the first to be told we wouldn't receive class rankings. Perhaps that's what Massad was recalling; my transcript doesn't show any ranking.

I do hope that this provides some clarification about the reported boycott. I still have questions. Did we in fact reject the free stethoscopes, and was it Lilly that made the offer we turned down? And can someone please tell me what a grade of "-" means?

MARK A. KLAUSNER '77  
PRINCETON, NEW JERSEY

## Semiformal

Early in my medical school career, I was sent, along with several students, to Boston City Hospital for a conference with William Castle '21, a pioneer in hematology. Upon our arrival, we found the professor in overalls; he had been repairing the hospital elevator. He started his lecture by complaining that the repairmen had had the audacity to want to charge the hospital five dollars per hour for their repair work.

Toward the end of my fourth year, my wife and I received an unusual telephone call. The caller announced that she was Mrs. William Castle, and she invited us to a Sunday dinner at her home. At first I thought it was a prank call; my classmates were always putting some woman up to call me, claiming to be from the dean's office and informing

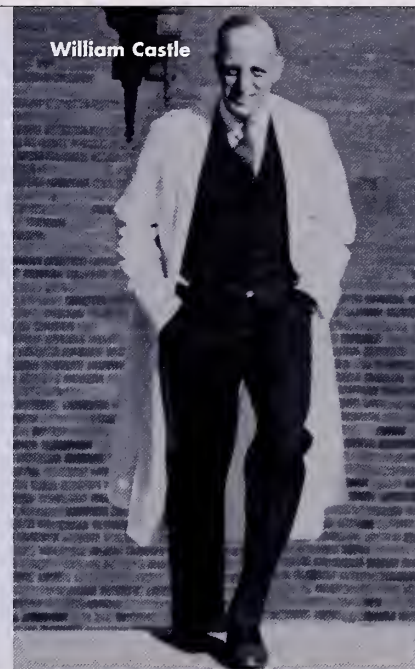
"During the dinner, Mrs. Castle served a homemade chicken potpie. 'What, no liver?' I shouted. The professor broke into a profound laughter. He explained that he would not eat liver, even if he were starving to death."

MURRAY STROBER '51

me I'd failed physiology. Mrs. Castle must have thought that I was mentally disturbed, as I repeatedly challenged the veracity of her call. The next day I overheard another student claiming that he and his wife were invited to the same dinner. Surely, I thought, this invitation must be a prelude to a final examination to determine whether I could graduate from the Medical School. I immediately began reading up on Dr. Castle's research, such as his discovery of the gastric intrinsic factor.

The next dilemma occurred on the day of the dinner, when my wife and I couldn't decide how to dress. I had my suit pressed and my shoes shined. My wife donned her finest dress, adding a hat and white cotton gloves. When we arrived at the designated address, I realized the invitation had indeed been authentic. In the driveway was Dr. Castle's 1933 Model T Ford. Dr. Castle responded to my ringing the doorbell. He was wearing an open shirt, dungarees, and sneakers, and he had a glass of beer in his hand. With his melodious bass voice he welcomed us.

During the dinner, Mrs. Castle served a homemade chicken potpie. "What, no liver?" I shouted. The professor broke into profound laughter. He explained that he would not eat liver, even if he were starving to death. I later explained my confusion with Mrs. Castle's tele-



phone call, describing the pranks that had been played on me. When I added the story about preparing for the visit by boning up on his research, Dr. Castle broke into thunderous laughter.

At the end of the evening, Dr. Castle declared that he and his wife had had a wonderful time. He planned to make this type of dinner an annual event.

After graduation I started my internship on the Downstate University Service at King County Hospital in Brooklyn, New York. One day, a rumor was circulated that Dr. Castle was at the hospital to see his old friend, William Dock, who had been a house officer at Peter Bent Brigham Hospital in 1923. Apparently, Dr. Castle asked Dr. Dock whether I was an intern on his service. While making rounds on one of the wards, Dr. Castle saw me and rushed over to embrace me warmly and inquire about my wife. I was the topic of hospital gossip for some time—and my appointment to the next year's residency program was assured.

MURRAY STROBER '51  
PASSAIC, NEW JERSEY

*The Bulletin welcomes letters to the editor. Please send letters by mail (Harvard Medical Alumni Bulletin, 25 Shattuck Street, Boston, Massachusetts 02115); fax (617-432-0089); or email (bulletin@hms.harvard.edu). Letters may be edited for length or clarity.*

## Ready for Prime Time Players

**T**HE UNTHINKABLE HAS HAPPENED: HMS has dropped to number two in the medical school rankings, losing out to some school in Baltimore. What is a dean of medical education to do? In the 102nd Second Year Show, Jules Dienstag sets out to restore HMS to its former glory by crafting the new, new, new curriculum.

*He's Got Curriculum*, directed by Paulvalery Roulette and Ibrahim Khansa, takes much of its inspiration from television. Dienstag gives a group of professors one last chance to reconfigure their courses and help bring HMS back to the top spot in the rankings. Each professor's new (but not-so-improved) course is presented via a spoof on a television show, after which he or she must enter the boardroom and receive Dienstag's verdict.

Chris DeSesa's turn as Dienstag makes the show. Part Dr. Evil, part Donald Trump, DeSesa's Dienstag gleefully insults and then fires each and every

instructor, with impeccable comic timing. An unabashed blowhard who "eats success for breakfast," he tells course director Kate Treadway (Katherine Walker) that her introductory course needs "a little less Introduction and a little more Profession." No wonder Trudy Van Houten (Regan Bergmark) calls him "Dr. Meanstag." Dienstag's buffoonery is further enabled by his adorable assistant Evan, played by Jordan Strom, who eagerly caters to Dienstag's every whim. Strom's acting chops were evident, since despite his lack



**PLAYING IT COOL:** The Class of 2011 devotes its Second Year Show to poking fun at the new curriculum.

of a speaking part, his antics as Evan frequently had the audience in stitches.

In between send-ups like "MCM Bachelor," a *Dating Game*-style show in which cell biologist Randy King (Adam Donnell) must find his biochemistry queen, the audience was treated to commercials for faux pharmaceuticals like Gunnopril (for the treatment of idiopathic gunner syndrome) and Geico Dental Insurance ("So easy, even a Dental can do it!"). Those hankering for dancing got an occasional fix.

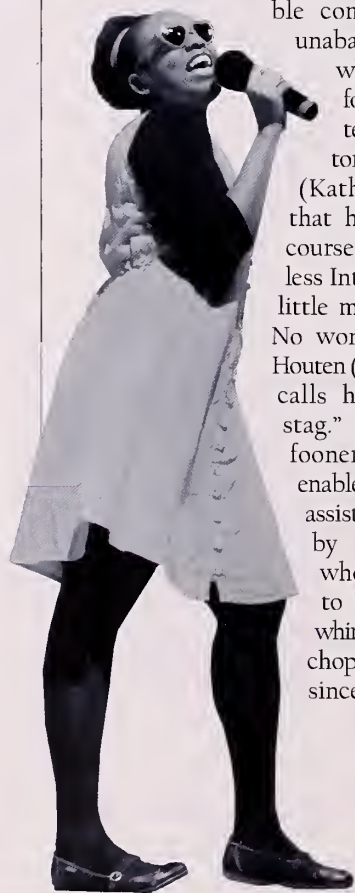
Several musicians from the Class of 2011 stood out. Chinyere Obimba, who served as the production's music director, got the show off to a strong start with "Study, Study, Study," set to the tune of "For the Love of Money" by the O'Jays, and later stole the scene during "Physiology Magic School Bus." Nadia Farjo's vocal talent was kept under wraps until the end, when, dressed as an ob/ob mouse in tribute to HMS Dean Jeffrey Flier's obesity research, she mas-

terfully delivered the concluding song, "This Is How We Do It (HMS and HSDM Style)." Another musical highlight was Sherman Jia's violin accompaniment to a reading of the children's book *Ferdinand the Bull* during intermission.

It would not have been the Second Year Show without searing parodies of everything HMS holds dear. Referring to Patient-Doctor I, a student asks, "Why do we have to take a class to learn to pretend like we care?" HST students, as hopelessly nerdy and socially inept as ever, demand to be known by their new culturally sensitive name: the London Society. Even Sarah Palin is skewered.

As usual, the breadth of talent was impressive. If the second-years want HMS to regain its top ranking, they might consider challenging those students in Baltimore to a talent competition. ■

*Emily Lieberman is the editorial assistant for Focus.*





## Linked In

**W**HAT DO URBAN PLANNING AND neuroimaging have in common? What about smog and kidney disease, or cancer vaccines and polymers? These are just a few of the intriguing research collaborations to receive grant funding from Harvard Catalyst, the Harvard Clinical and Translational Science Center.

The first round of 62 pilot grant recipients, announced this spring, connects 218 investigators from 23 Harvard schools and academic health care centers with the shared goal of addressing important issues in human health. The urban planning and neuroimaging collaboration, for example,

will unite researchers from the Harvard University Graduate School of Design and Massachusetts General Hospital. The Harvard School of Public Health and Brigham and Women's Hospital will join forces to study the effects of air pollution on kidney disease. And the Dana-Farber Cancer Institute and the Harvard School of Engineering and Applied Sciences will collaborate on the role of polymers in vaccinations.

With these one-year, \$50,000 grants, Harvard Catalyst aims to stimulate clinical and translational research in three ways. First, the grants enable researchers to jointly address important scientific questions. Second, they provide the

means to generate the preliminary data needed to apply for long-term funding. Lastly, the grants help focus scientific resources and expertise on high-risk, high-impact areas of research.

"The pilot grants of Harvard Catalyst demonstrate the drive among the faculty to collaborate on unique problems," says Jeffrey Flier, dean of HMS. "Watching this process unfold has confirmed my deep conviction that we can most effectively impact human health by encouraging people from across Harvard who have never worked face to face to work together."

For more information, visit <http://catalyst.harvard.edu>. ■

## Reel Medicine

**I**N 1987, THE CREW OF THE television program NOVA arrived on the HMS campus to begin shooting what would become 700 hours of footage of seven first-year students. The resulting documentary series—"Can We Make A Better Doctor?"—aired in 1988 and portrayed the stress, drama, and rewards of medical school. Subsequent episodes detailed the doctors' residencies and early years of practice.

This spring, a two-part installment called *Doctors' Diaries* catches up with the physicians for an update that is, at times, poignant: One doctor no longer sees patients; others have faced challenges with their health or personal relationships. Still, these alumni have few regrets. "In my years of practice, I have seen all the ranges of extreme tragedy, extreme joy," says Tom Tarter '91 of his experience. "I can't think of anything that has grounded me so much in my life as being a doctor."

To learn more, visit [www.pbs.org/wgbh/nova/doctors](http://www.pbs.org/wgbh/nova/doctors). ■

## Making His Move



**GEORGE THIBAUT '69 HAS ANNOUNCED** his plan to step down as HMS chair of alumni relations in October. Thibault, the former director of The Academy Center for Teaching and Learning at Harvard Medical School, has spent most of his medical career at HMS and its affiliated hospitals. He has served as chief medical officer at Brigham and Women's Hospital and as vice president of clinical affairs at Partners HealthCare. A cardiologist by training, Thibault has been president of the Josiah Macy, Jr. Foundation since January 2008.

In anticipation of the change, Alumni Council President Steven Weinberger '73 has convened a nominating committee to begin the search process for Thibault's

successor. "George's recent tenure as chair of alumni relations has capped off a long and distinguished record of contributions to HMS," Weinberger says. "Throughout his career, he has exemplified the 'quadruple threat' through excellence in patient care, teaching, research, and administration." ■

## Leadership Sought

**TO NOMINATE YOURSELF OR ANOTHER** HMS graduate to take on the role of chair of alumni relations, contact Debra Metcalfe, director of alumni relations, at 617-384-8518 or [debra\\_metcalfe@hms.harvard.edu](mailto:debra_metcalfe@hms.harvard.edu).

## Course Adjustments

**H**EALTH CARE FACES TRULY DAUNTING ISSUES AS WE approach the second decade of the twenty-first century: 47 million uninsured Americans; Medicare expenses that consume 16 percent of the federal budget and are projected to grow to 20 percent by 2016; physician shortages, particularly in primary care; and a health care system that achieves stunningly poor outcomes despite staggering costs. At the same time, the medical education community confronts a widening array of challenges in training tomorrow's physicians, challenges that affect both undergraduate and graduate medical education and are often related to changes in health care and in the training environment.

Given my local and national perspectives on medical education—gathered during more than twenty-five years as a clinician-teacher and medical educator at HMS, and, more

recently, five years directing medical education at the American College of Physicians—I decided to use this column to discuss four major environmental changes affecting health care and medical education.

*Limitations on duty hours.* In recent years, regulatory bodies have imposed restrictions on resident work hours, with the intent of reducing resident fatigue and improving patient safety. The subsequent increase in physician-to-physician hand-offs has led, however, to concerns about diminished continuity and the potential for decreased quality of care. Reconciling these concerns necessitates creative approaches to scheduling and patient coverage that balance and best meet the needs of both trainees and patients.

*Pressures on teaching faculty.* Faculty members need time and support for the responsibilities that are critical to the profes-



Students and trainees must understand the importance of assessing and continually improving the quality of care they provide.

recently, five years directing medical education at the American College of Physicians—I decided to use this column to discuss four major environmental changes affecting health care and medical education.

*Emphasis on quality of care.* Catalyzed by the Institute of Medicine's *Crossing the Quality Chasm* report, physicians are now judged not only by what they know, but more importantly by what they do when caring for patients—that is, the quality of care they provide. Students and trainees must be educated in an environment in which quality of care is a core value, and they must also understand the importance of assessing and continually improving the quality of care they provide. Faculty who supervise these students must embrace a culture of quality, commit to teaching the principles of quality improvement and the delivery of high-quality care, and serve as role models for the implementation of such improvement and care.

*Change in the nature of inpatient care.* For several years now, the inpatient setting is no longer an ideal place for trainees to learn how to diagnose acute illness, follow the course of acute disease, and take primary responsibility for patient care. Instead, preadmission diagnoses, shortened inpatient stays that focus on throughput, and the delegation of decisions to attending physicians and consultants all detract from the student's exper-

ience and professional development. As a consequence, the outpatient setting must play a greater role in training future physicians and must assume a focus on prevention and on better management of chronic illness to avoid hospitalization.

*Limitations on duty hours.* In recent years, regulatory bodies have imposed restrictions on resident work hours, with the intent of reducing resident fatigue and improving patient safety. The subsequent increase in physician-to-physician hand-offs has led, however, to concerns about diminished continuity and the potential for decreased quality of care. Reconciling these concerns necessitates creative approaches to scheduling and patient coverage that balance and best meet the needs of both trainees and patients.

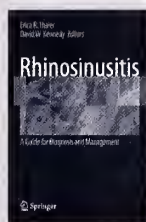
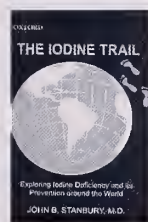
*Pressures on teaching faculty.* Faculty members need time and support for the responsibilities that are critical to the profes-

sional development of students and trainees: evaluation through direct observation, frequent and high-quality feedback, mentorship, and role modeling. Yet faculty members are under increasing pressure to generate more revenue through either clinical productivity or grant funding. As teaching activities do not generate revenue, clinical institutions require clinician-teachers to see a greater number of patients, a move that lowers the priority placed on their teaching responsibilities. Fortunately, many institutions have acknowledged the need to support teaching faculty by remunerating their educational duties and emphasizing quality and quantity of teaching in criteria for promotion.

These four areas do not capture all the changes affecting medical education; notably absent are the pressures accompanying the current economic downturn. They do, however, represent areas over which medical schools, teaching hospitals, and educational leaders have some control. How well institutions address these challenges will determine how well they can meet the educational needs of students and trainees and the clinical needs of patients. ■

Steven E. Weinberger '73 is senior vice president for medical education at the American College of Physicians in Philadelphia. He can be reached at [sweinberger@acponline.org](mailto:sweinberger@acponline.org).





## A Doctor in Galilee

*The Life and Struggle of a Palestinian in Israel*, by Hatim Kanaaneh '68 (Pluto Press, 2008)

A native of Galilee born before the creation of the state of Israel, the author founded the Galilee Society, a non-governmental organization aimed at achieving adequate health, environmental, and socioeconomic conditions for Palestinian Arabs in Israel. In this, his memoir, Kanaaneh describes the formation of his grassroots organization and describes how he fought for the basic human rights of his patients.

## Uncle Sam's Shame

*Inside Our Broken Veterans Administration*, by Martin Kantor '58 (Praeger Security International, 2008)

The author, a psychiatrist, reveals how everyone involved in veterans' medical care—from the nation's capital, to doctors, to the veterans themselves—is responsible for the breakdown of the system. He pinpoints how common illnesses that veterans suffer are mismanaged, and he offers his ideas for meaningful reforms to the current system.

## The Iodine Trail

*Exploring Iodine Deficiency and Its Prevention Around the World*, by John B. Stanbury '39 (Oxford University Press, 2008)

This book takes medical research out of the laboratory and into South America

and Africa as it details the author's travels during his decades-long study of iodine deficiency disorders. Filled with tales of harrowing encounters with mountain gorillas, venomous snakes, and callous dictators, it also offers an introduction to the field of iodine deficiency and an insider's account of scientific collaboration.

## Rhinosinusitis

*A Guide for Diagnosis and Management*, edited by Erica Thaler '90 and David W. Kennedy (Springer, 2008)

This guide discusses the medical, surgical, and pharmacological management of rhinosinusitis. Pediatric considerations and the role of allergies, asthma, and systemic diseases are detailed. The editors devote a special chapter to alternative medicine, review surgical therapies, and include information about diagnostic imaging techniques.

## Worried Sick

*A Prescription for Health in an Overtreated America*, by Nordin M. Hadler '68 (University of North Carolina Press, 2008)

Hadler argues that access should not be the only issue in the current debate about health care: the amount of care available should also be on the table. He urges readers to educate themselves so they can make informed decisions about what care is truly necessary. Each chapter addresses the uses and abuses of a particular procedure or treatment, such as mammography

and coronary stents. Accompanying source chapters provide references that help inform Hadler's critique.

## The Infertility Assistant

*A Practical Planner to Help You Through Your Infertility Journey*, by Chantal Caviness '93 and Ann Montalvo-Guillerman (SOS Publishing, 2008)

A pediatrician, Caviness underwent six years of infertility testing and treatments before having twins by surrogacy. This guide is designed to help women and couples track information involved in the diagnosis and treatment of infertility while maintaining a sense of control. The book includes sections on choosing a doctor, medical evaluation, self-care, financial and insurance-related concerns, and treatments such as intrauterine insemination and in-vitro fertilization.

## How to Use Herbs, Nutrients & Yoga in Mental Health Care

by Richard P. Brown, Patricia L. Gerberg '75, and Philip R. Muskin (W. W. Norton, 2009)

This guide covers major categories of mental health—mood disorders, cognitive decline, substance abuse—and presents a range of complementary and alternative treatments found to be helpful for those conditions. The use of herbs, vitamins, hormones, and mind-body practices is discussed with a focus on methods that are practical and easy to administer and that have few side effects.



## Rites of Passage

**W**HETHER THROUGH CONDOMS or abstinence, most methods to prevent the spread of sexually transmitted diseases have a common logic: keep the pathogen out of the body altogether. Although reasonable, that approach does not help countless people who have little or no control over their sexual circumstances.

Now, Judy Lieberman '81, an HMS professor of pediatrics at Children's Hospital Boston and a senior investigator at the Immune Disease Institute, has overseen the development of a topical treatment that, in mice, disables genes necessary to herpesvirus transmission. The treatment uses the intracellular mechanism called RNA interference (RNAi) to deal the virus a molecular one-two punch that knocks out both the bug's ability to replicate and the host cell's capacity to take up the virus.

The treatment is just as effective when applied from one week before to a few hours after exposure to the virus. So the basic biology of the prophylactic is responsive to real-world demands.

The findings appear in the January 22 issue of *Cell Host and Microbe*.

### Now and Then

"People have been trying to make a topical agent that can prevent transmission for many years," says Lieberman. "But one of the main obstacles to this goal is compliance. One of the attractive features of the compound we developed is that it creates in the tissue a state that's resistant to infection, even if applied up to a week before sexual exposure.

If we can reproduce these results in people, use of this microbicide could have a powerful impact on preventing transmission."

According to the World Health Organization, approximately 536 million people worldwide are infected with herpes simplex virus type 2 (HSV-2), the most common strain of the herpesvirus. Women are disproportionately affected, with potentially serious consequences. The virus can pass easily from mother to newborn during delivery, and untreated infants risk brain damage and even death. While HSV-2 alone is not life threatening for adults, infection does increase a person's vulnerability to other viruses such as HIV.

In order for the herpesvirus to infect a host cell, two conditions must be met. First, the virus must enter and take over the cell. Second, the virus must repro-

duce itself. Lieberman's topical treatment uses RNAi to foil both events.

### Method Acting

RNAi, a biological process identified barely a decade ago, has transformed the field of biological research. This process, which occurs naturally in the cells of all multicellular organisms, regulates the translation of genetic information into proteins. By introducing tiny RNA molecules into cells, researchers can target a gene and block its ability to build protein molecules, essentially disabling the gene.

While RNAi has profoundly improved scientists' ability to probe and interrogate cells in Petri dishes, therapeutic breakthroughs using the process have proved elusive. Researchers have had difficulty targeting the delivery of the tiny

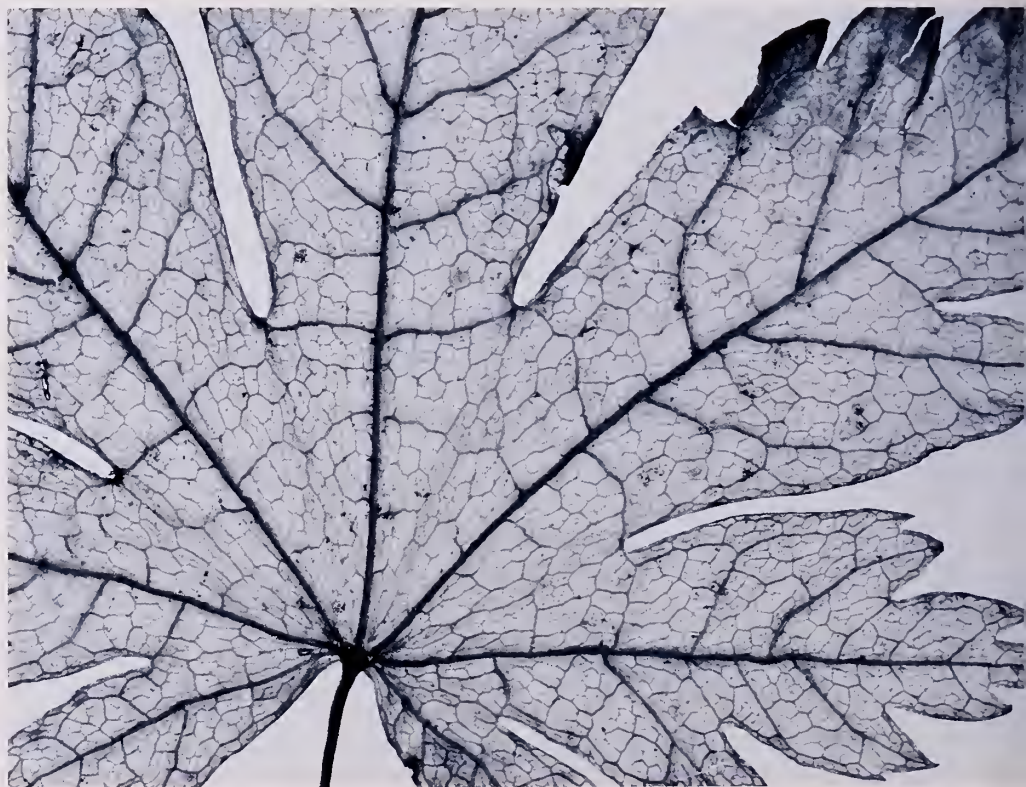


PHOTO: DUNCAN WALKER/ISTOCKPHOTO



## No Sponge Left Behind

### WHAT DO PILOTING AN AIRPLANE AND PERFORMING SURGERY HAVE IN COMMON?

A simple safety checklist that can improve performance. According to a Harvard-led study, surgical teams that reviewed a safety checklist before and after major operations cut their rates of deaths and complications.

The checklist, used orally to confirm such items as the safe delivery of anesthesia, the patient's identity, the site and type of operation, appropriate antibiotic use, and the names and roles of surgical team members, reduced post-surgery complications and deaths by one-third in the eight hospitals that participated in the international study. Overall, the rate of complications went from 11 percent to 7 percent while the inpatient death rate fell by more than 40 percent.

"The checklist reduced complications by double digits in every hospital we put it in," says Atul Gawande '94, the team's leader and on HMS associate professor of surgery at Brigham and Women's Hospital. "With 234 million operations performed worldwide every year, universal use of this checklist could save hundreds of thousands of lives." Gawande and his surgical team at Brigham and Women's Hospital have used the checklist for almost a year.

Gawande's research team screened complications and death rates after surgery in urban hospitals in Canada, England, India, Jordan, New Zealand, the Philippines, Tonzonio, and the United States. Outcomes for more than 7,600 patients were analyzed 30 days following their surgeries and included a near-even split in the number of patients with surgeries before and after the checklist was introduced.

As a result of the study's findings, Ireland, Jordan, the Philippines, and the United Kingdom plan to implement the checklist in operating rooms nationwide. In the United States, hospital associations in New York, North Carolina, South Carolina, and Washington State have committed to using it. "Our goal," says Gawande, "is to get surgical teams worldwide to try it and make it a part of their practice."

The study was part of the World Health Organization's Safe Surgery Saves Lives campaign and appeared in the January 29 issue of the *New England Journal of Medicine*. ■



RNA molecules into selected cells and tissues in a living organism.

For this study, Lieberman and her team modified a delivery technique they had previously developed so as to treat murine cells with strands of RNA that could block certain genes from producing proteins key to the herpesvirus infection process. The technique allowed the researchers to fuse the RNA strands to cholesterol molecules, which helped chaperone the RNA molecules through the cell membranes. When applied as a topical solution, the RNA molecules could be fully absorbed into the vaginal tissue, protecting the mice against a lethal dose of administered virus.

One RNA molecule in the topical solution targeted the herpes gene *UL29*, a gene the virus uses in its replication process. Another RNA molecule targeted the actions of Nectin-1, a surface protein on cells in the vaginal tissue. Nectin-1 binds to extracellular substances, including herpesvirus, and ushers them into the cell. By shutting down Nectin-1, the virus cannot get into the cells.

The actions of either RNA molecule would be sufficient to block the virus. But delivered together in this RNAi cocktail, they prompt the host cell to block the virus's entrance and to implement a backup scheme that wipes out the invader's ability to multiply if it does enter the cell.

"As far as we could tell," says Lieberman, "the treatment caused no adverse effects, such as inflammation or any kind of autoimmune response. And while knocking out a host gene can certainly be risky, we didn't see any indication that temporarily disabling Nectin-1 interfered with normal cellular function." Lieberman recently received a grant for work with a corporate partner on a topical microbicide suitable for human use. In addition, she is investigating how the study's approach might be used to treat HIV. ■

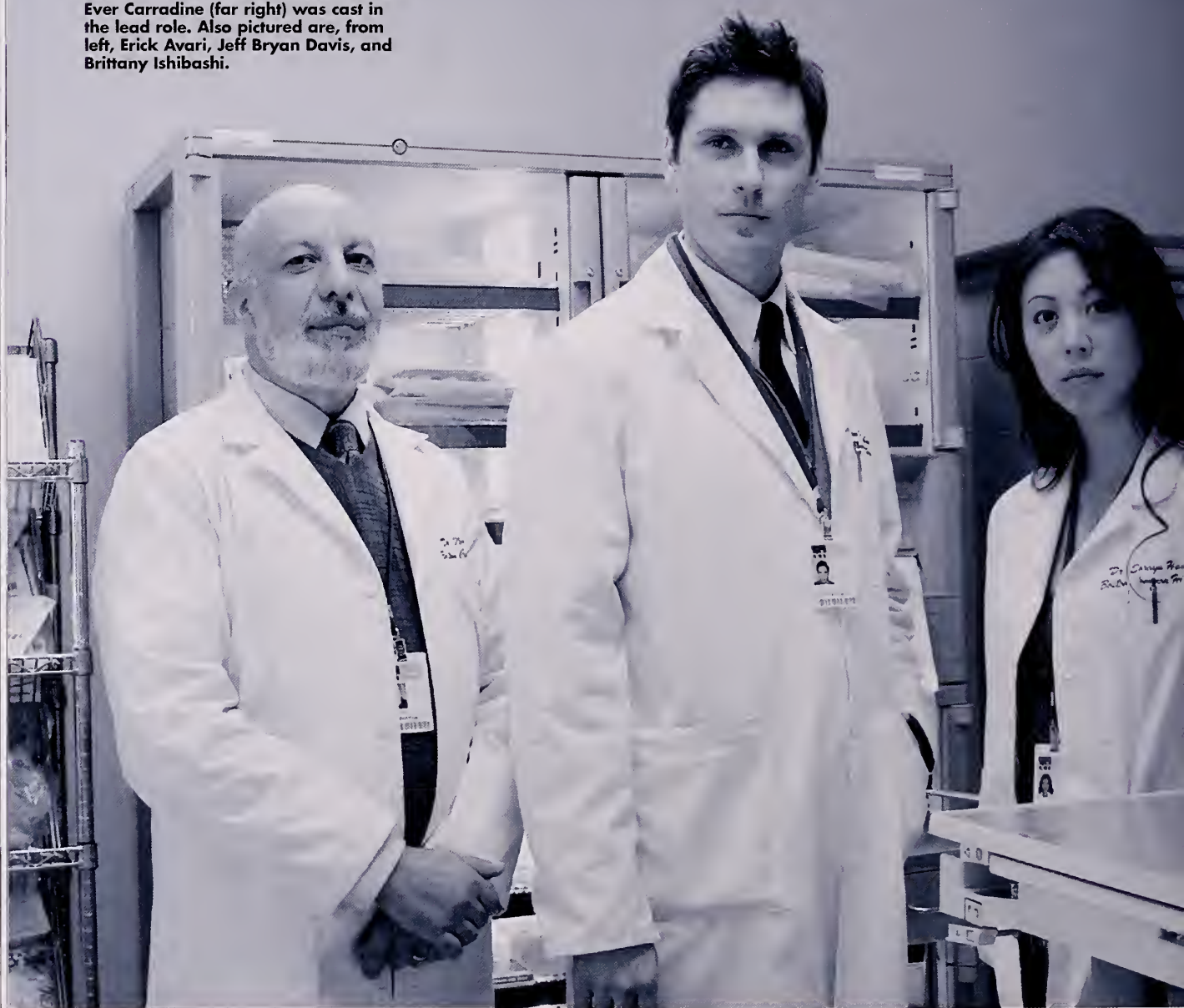
David Cameron is associate director for media relations at Harvard Medical School.

Nuño Domínguez is on intern with Focus.

# SPECIAL

BY ALICE FLAHERTY

**TEST PILOT:** The life of neurologist Alice Flaherty formed the basis for a proposed television series, *The Madness of Jane*. Ever Carradine (far right) was cast in the lead role. Also pictured are, from left, Erick Avari, Jeff Bryan Davis, and Brittany Ishibashi.





What can the dramatic arts teach doctors  
about improving their performances?

# EFFECTS

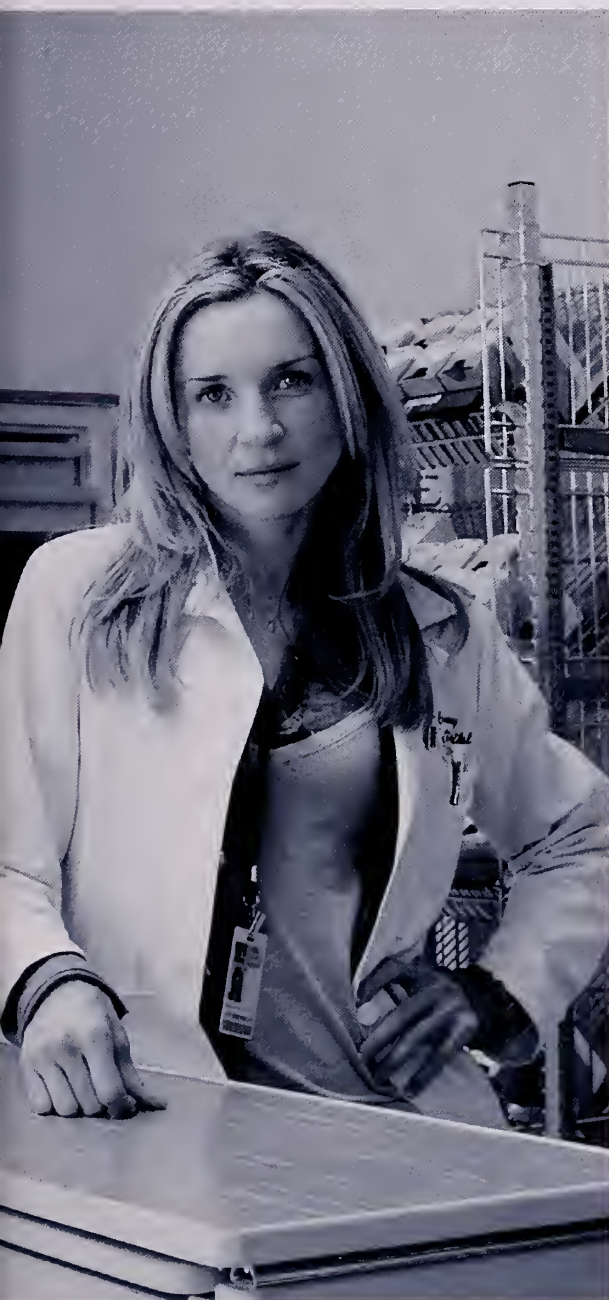


PHOTO: COURTESY OF LIFETIME TELEVISION

**SEVERAL YEARS AGO**, my husband and I were eating breakfast with our friend Rob LaZebnik, a Hollywood scriptwriter, when my husband asked Rob whether he was working on a new pilot. Rob blushed. “I’ve been meaning to ask you two...” he said. “Well, if this is in any way disturbing... I want to write a doctor show whose lead character is based on Alice. You know, a hypergraphic neurologist at a Boston teaching hospital who’s a bit crazy. Kind of *House* meets *Ally McBeal*.”

My first thought was, *Oh no, poor Rob, what a bad idea. It’s true what he said the other day, that comedy writers over 40 are dog meat.* My second thought was, *A TV show all about me? Wheel!* My husband’s first and second reactions were identical: dismay.

**RETURN ON INVESTMENT:** Actress Ever Carradine cyberstalked Alice Flaherty to study her mannerisms and prepare for the role. To Flaherty's relief, Carradine avoided becoming an "authentically wooden neurologist" and instead cultivated fluent gestures.

My eagerness trumped my husband's wisdom, and I soon found myself helping with the script, inventing neurological cases for the brilliant protagonist to solve. I also tried to cut down on unnecessary medical jargon that crept into the dialogue, such as not saying "upper extremity" when "arm" would do. Rob resisted my editing. "People love the jargon," he said. "That's the lesson Hollywood learned from *ER*." I later realized that the actors liked using the jargon for the same reason medical students do: it makes them sound like real doctors.

Rob had warned me that most pitches never turn into scripts, most scripts are never sold, and most purchased scripts are never filmed. So I was surprised to find myself having to ask my department chair, during my yearly review, to hold her thought; my agent and my entertainment lawyer were on the line to discuss how much to ask for the rights to my life story.

During the process of casting "me," the producers reviewed dozens of audition tapes. One woman both looked and acted



PHOTO: COURTESY OF LIFETIME TELEVISION

## FACEBOOK

What can science tell us about acting? More each year. Psychologist Paul Ekman, for instance, has demonstrated that there are six basic facial expressions that people from every culture understand innately. Although we can't rely on expressions like winking, the meaning of which varies across cultures, when we're in China, we can be sure that native Chinese will understand our frowns, smiles, pouts, raised eyebrows, sneers, and wrinkled noses to mean anger, happiness, sadness, surprise, contempt, and disgust.

Moude Mitchell, a stage and film actress, once asked me why, when she was starring as Noro in an adaptation of *A Doll's House*, her moscoro ran down the left side of her face long before it did on the right. I told her this response reflects the fact that the right side of the brain controls negative emotions more than the left one does. Because the right brain controls the left body, the left side of the face tends to express sadness more than the right side

does. Moude seemed amused by my explanation and said that from then on she would play her most tragic scenes with her left profile toward the audience.

To learn more about expressions of sadness, I turned to colleagues in psychiatry. Although there has been recent debate over whether tears are cathartic, or only make you feel worse, most psychotherapists are strong believers in the purgative effect of tears. One psychotherapist told me with a faint pride that, on average, patients cry in nearly a third of their sessions with her. "Some don't feel they get their money's worth if they don't cry each time," she told me.

The hall leading to her office seemed graphic testimony to her effectiveness; its walls were lined with towers of boxes of facial tissues. When I mentioned that, she burst out laughing.

"Those aren't my tissues," she said. "Those are the realtors' in the next suite. You know what housing prices are like in Boston." ■



# What was sobering about the show was not the ways in which it was less than real, but the ways in which it was more than real.

remarkably like a neurologist—remarkably like me, in fact, in a suitably dry performance. I was relieved when the casting agents chose someone less authentic.

Several colleagues have asked me whether it felt degrading to be played by a tall blonde with legs from here to tomorrow. Maybe if I hadn't been so lucky with this particular actress, Ever Carradine, it would have been. Instead, I learned from her. At first I learned how to act like a good doctor; in the end, I learned how to be a better one.

## Charm School

*The Madness of Jane* featured the fictional Jane Conway, a quirky neurologist who festooned her office with Post-It notes, built odd contraptions to help her patients, and diagnosed rare diseases based on only a few symptoms. The show was neither a soap opera nor a sitcom, but a serious exploration of the personal foibles of doctors. Ever, a member of the Carradine acting dynasty, brought special insight to the role. Not only are her in-laws doctors, but a family member's serious illness had recently exposed her to a range of doctors' performances.

Before I met Ever, Rob called with a warning. "I don't want to freak you out," he said, "but Ever's been cyberstalking you, watching clips of documentaries where you were a talking head, to pick up your mannerisms." That was bad. What if she succeeded and turned herself into an authentically wooden neurologist? Luckily, she merely grafted some of my more harmless traits, like toe walking, onto her own set of more expressive behaviors.

Ironically, I had already been trying to incorporate Ever's mannerisms into my encounters with patients. In her audition tape, to convey therapeutic concern, she had used gestures more fluent than any I had in my own repertoire. Her smile when a treatment

worked, for instance, looked pleased for the patient, not just pleased at her professional skill. I began to try it out on the wards, with good effect. Life imitating art imitating life.

During the filming, my role resembled that of a neurology attending: I showed "residents" how to hold their brain stimulators properly, and I corrected their jargon. ("Subthlamic," not 'subthlamic,' darling.") Life-and-death decisions, though, were left to the director.

Life and art blurred further in that the filming took place in a real hospital that turned artificial each weekend: a Veterans Administration outpatient center that emptied itself out to rent to dozens of medical shows. When I saw extras sitting in the clinic waiting room for their next scene, I kept mistaking them for real patients. *Oh, poor woman*, I thought when I spied one middle-aged woman in a bad wig, *she must be getting chemo*. An instant later, I remembered, *Duh. She's an extra*. Another instant later, noticing that the other extras' wigs were skillful enough to look real, I realized that her bad wig was intentional—she was meant to look like a woman with a bad chemo wig. Art imitating art imitating life.

In the pilot's main medical plot, a Vermont maple sugar farmer's brain stimulator was reset after he was shocked while trying to dive under an electrified fence on his farm. A typically unrealistic Hollywood storyline, except that it had really happened to one of my patients. The television version ended up less bizarre than the true version.

What was sobering about the show was not the ways in which it was less than real, but the ways in which it was more than real. In particular, the actors playing doctors had notably better bedside manners than many real doctors. They made eye contact with their patients, spoke at a comfortable pace, and, when the patients complained of

pain, focused on the complaint rather than changing the subject.

Also revealing was the director's custom of shooting important scenes as many as twenty times in a row. While some of the actors duplicated their lines and gestures as accurately as automatons for each take, the better actors tried something new each time. I thought about my own limited repertoire. During initial patient visits, for example, I made the same joke every time I pulled out my reflex hammer; my flexibility extended only so far as to ensure I never repeated that joke on follow-up visits.

## Get Your Act Together

The good actors' ability to modify their behavior contrasted sharply with an event on my neurological service that happened soon after the show's pilot was shot. One of my senior residents was giving a death talk to the family of an elderly woman with multiorgan failure. The family members were dramatically upset. Earlier, when we had told them that the woman's prognosis was poor, one daughter had fainted and another had begun dry retching over a trash can. The resident's obvious discomfort was natural, but it wasn't helping.

He folded his arms tightly and drummed his fingers against his chest as he gazed over the family members' heads toward the door. The daughters asked more insistently whether we had done all we could—a natural response to a doctor who was signaling that all he wanted was to be done with them. Finally I couldn't resist his signals either, and I sent him off on an errand. He shot out the door, and the family members relaxed almost immediately. They were not, fundamentally, upset with us. They were just upset.

Afterward I discussed the room's heightened drama with the resident. I suggested, in what I hoped was in a

## Quoting dialogue from an episode of *House, MD* doesn't produce the same air of gravitas as quoting passages from a Walker Percy novel.

non-confrontational way, that in future situations he might avoid crossing his arms and drumming his fingers. He seemed to find my advice reasonable, but added, "I could never do that, though. When I'm nervous, I cross my arms."

I showed him a simple alternative, sitting with his palms held loosely open on the table. That gesture, the universal human "Look! No weapons!" signal of non-aggression, works as well when dealing with angry patients as it does with your boss. "Oh, I wouldn't feel comfortable doing that!" he said. "I *have* to cross my arms."

### Mirror, Mirror

In medical school, doctor-patient courses that teach the art of medicine often use the literary arts as a model. Lecturers hope that by assigning, say, Tolstoy's short story "The Death of Ivan Ilyich," they can teach students to read a patient like a book. Perceptiveness doesn't inevitably lead to altruistic action, though. Indeed, feeling a patient's suffering too much can make an empathic person want to flee rather than to stay and help. And even the most polished phrases of compassion lose their power when a doctor recites them rapidly while gazing at a computer screen.

Instead, the true art of medicine is more dramatic than literary, as the disproportionate number of doctor shows suggests. Real medicine's use of ritualized lines and gestures, operating theaters, and costumes—the scrubs and the johnnies—are much more than conventions. Their dramatic symbolism can give doctor-patient contact an emotional meaning that transcends the notion of cure. Their ceremonial quality, by shaping the patient's expectations, can even be part of that cure.

Doctors don't like to think of medicine as theater, though. Drama's status as a low art, overly emotional and deceptive, can discomfort the academic psychia-

trists who tend to teach the bedside-manner courses. Quoting dialogue from an episode of *House, MD* doesn't produce the same air of gravitas as quoting passages from a Walker Percy novel.

A major force that keeps doctors from acting well is that we like to think we are above acting. Historically, as academic medicine became a scientific pursuit and doctors wanted to distinguish themselves from the quacks who cured with their flamboyant bedside manner alone, physicians in the academies adopted an undramatic aloofness that has persisted to this day.

When medical ethicists talk about deficits in bedside manner, they often present them as manifestations of the pressures on doctors' time or of the pain that an empathic bond with a patient can inflict. But we sometimes choose to act brusquely because that's how brilliant, scientifically driven diagnosticians are supposed to act. Subconsciously, many of us believe that empathy is the nurses' job, or we save it for terminal patients for whom we have nothing more potent.

Yet science can now demonstrate the benefits that warmer doctor-patient interactions can bring. The placebo effect that can be achieved, for instance, when doctors' behavior makes patients expect to get better, is nearly as helpful as the workings of many of the most expensive drugs. Sympathetic human interaction produces real changes in the subcortical regions of adult brains and causes permanent changes in the DNA transcription of children.

Television medical dramas, despite their often soapy quality, have real-world relevance: They reflect and shape how patients play the sick role and how they expect doctors to behave. An episode of *ER*, for example, stressed the role of physicians as patient advocates when surgeon Peter Benton fought a colleague over the importance of following a safe surgery checklist; his insistence on using

it ended up saving his one-time protégé John Carter from kidney failure.

Teaching students the art of medicine as drama has another problem besides our fear of the theatrical as false. Acting skills are difficult to teach. Performance gives introverted premeds stage fright, whereas literary contemplation of another's suffering can be done in the privacy of one's own head. Neither working doctors nor trainees receive much visual exposure to good role models of empathic action. Feedback about behavior is even rarer and generally comes long after the patient has left the room.

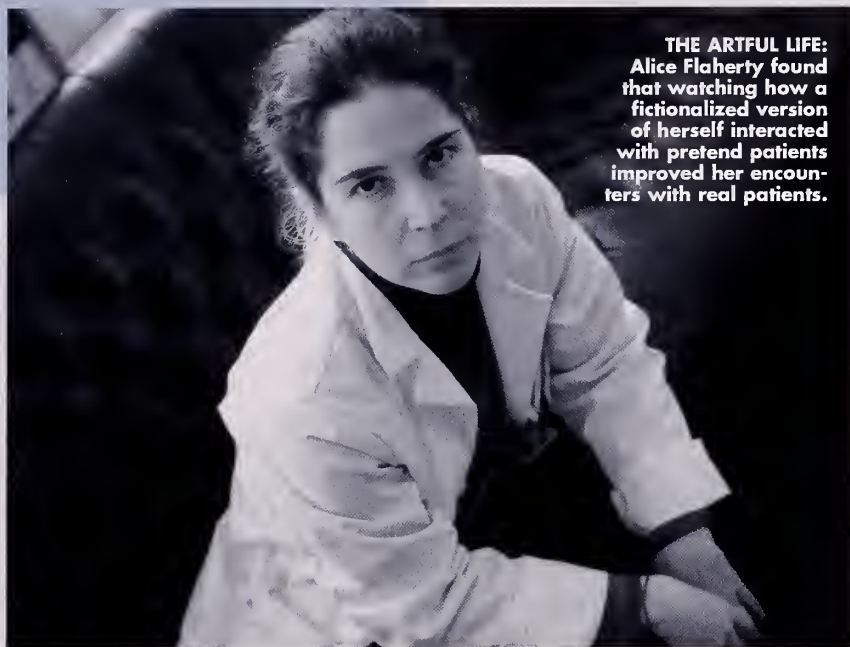
The actors on Rob's show, unlike my residents, received immediate feedback after each shoot. The director would call out advice such as, "Too weepy! This isn't *Beaches*." After the next take, "Too dry! Too Helen Mirren in *The Queen*." Or: "Hey! We're not doing *Flatliners* here."

### The Science of the Art

Recently, though, actors have been giving medical students feedback about how to become better doctors. The Objective Structured Clinical Examinations, or OSCEs, use actors as standardized patients to help assess the clinical performances of fourth-year medical students. These tools are popular with both students and faculty. By presenting communication skills as concrete abilities that can be tested, these exams make even the most hard-nosed students take bedside manner more seriously than doctor-patient courses—with their emphasis on emotional exchanges between doctors and patients—have done. And the actors, many of whom have by now observed hundreds of students, are perceptive in their feedback.

In the hierarchical world of medicine, though, students focus more on what faculty examiners say. The "patient's" words are given about the same weight as the opinions of real patients. The





**THE ARTFUL LIFE:**  
Alice Flaherty found  
that watching how a  
fictionalized version  
of herself interacted  
with pretend patients  
improved her encounters  
with real patients.

emphasis of these exams is not on training but on testing students' abilities. And they occur only a few times a year, as actors are expensive.

Less cumbersome help with the art of acting well may come from unexpected sources, the very forces that bedside manner is traditionally meant to combat—science and technology. The explosion of social neuroscience research is starting to provide a bottom-up approach to playing doctor that complements art's top-down one. Studies of the facial expressions of emotions have turned the ability to produce a smile that looks real rather than ingratiating from an art to a science. (It's all about activation of the orbicularis oculi. Social smiles involve only the mouth; emotional ones crinkle the eyes as well.)

Medical education has made increasing use of high-tech simulations to teach skills learned best by performance, such as putting in central lines. The logical next step would be to construct multimodal simulations of human interaction that will allow students to learn how not to hurt patients' feelings by a technique other than learning from their mistakes.

Human-interaction simulators are already in use with populations that range from Asperger's patients who need to understand how their disquisitions affect their listeners, to police officers who want to detect lying, to shy people

who wish to speak more comfortably in public. The simulations that Asperger's patients use allow concentrated practice and feedback. Likewise, doctors could learn to reinforce such basic communication skills as maintaining eye contact, pausing to allow patients to ask questions, and avoiding jargon.

Medical students are eager to use clinical simulators. Doctors, however, are not. They don't want to take time away from their real patients to play doctor to fake ones. And now they may not need to: Recent developments allow the rapid feedback about performance that simulations can provide—but in the real world, without slowing actual clinical encounters.

The MIT Media Lab has developed a number of such devices. One is a beeper-sized box called the Monologue Monitor that analyzes the wearer's speech patterns. Speakers who drone on without interruption get a discreet zap from their monitor, prompting them to pause so their listener can respond. Another device analyzes the listener's face for signs of puzzlement or negative emotion and signals any such sign to the speaker.

It's tempting to think that while these machines may help awkward computer scientists, they have nothing to offer socially sophisticated physicians. Surely we can recognize boredom when it stares us in the face. Perhaps that's true—but many of us have learned not to look.

While rapid behavioral feedback devices lack the subtlety of literary analysis, the empathic errors that we doctors make are often equally unsubtle ones of haste and habit. A number of studies show that doctors lose rather than gain empathic sensitivity during their training. In one study, for example, researchers used functional MRI to show that after two years of training, doctors had lost the activation in brain empathy areas that was seen in the healthy controls. Their medical education had helped them achieve dispassionate brain activity similar to that seen in people with Asperger's.

### Prompt, Please

Our adventure with the TV pilot had a happy ending, if not quite a Hollywood ending. As Rob had predicted, the pilot wasn't picked up. He returned to his job on *The Simpsons*, where he makes ten times more money than he would have made from the new show. Ever has a job with another TV series, filmed in Boston. And I was saved from the temptation of turning my office into the equivalent of the "real" *Cheers* bar, where I would have likely sold reflex hammers that played the show's theme song whenever you rapped someone's knee with them. I kept my job and perhaps gained some wisdom.

How much wiser am I? I learned a little about the art of acting well—and about the reasons doctors often choose not to behave artfully. Hollywood also taught me that medical shows can't teach doctors everything they need to know about acting well. Those shows are, after all, trying to model themselves on the worst of our manners as well as the best—as the protagonist of *House* demonstrates so vividly.

Science itself may soon help us improve the art of medicine. Advances in behavioral therapies are starting to help people with Asperger's interact with others more effectively; perhaps they can help doctors do so as well. In learning to help those who struggle with how to feel and act, we may end up learning how to heal ourselves. ■

*Alice Flaherty '94, PhD, is an HMS assistant professor of neurology at Massachusetts General Hospital.*





**WARDROBE CHANGE:** The snide and scruffy lead doctor of the hit television series *House, MD*, Gregory House (played by Hugh Laurie, bottom center), is a far cry from the earnest and clean-cut Drs. Kildare and Casey of earlier medical shows.



Television physicians have devolved from saints to sinners—without sacrificing ratings.

BY ALLAN J. HAMILTON

# PLAYING DOCTOR

**IT WAS ONLY ONE SENTENCE, A MERE TEN**

words: “I’m not a doctor, but I play one on TV.” With those words, uttered in a 1986 commercial, Peter Bergman parlayed his role as a physician on the soap opera *All My Children* into an endorsement for Vicks Formula 44 cough syrup. In delivering what would become an iconic statement, he blurred for the first time the distinction between the dramatic portrayal of medicine on television and medicine in real life.

**CLINICAL CASE:** The producers of *Medic*, one of television's earliest medical shows, tried to capture the life of doctors and the tempo of clinical care by filming the series in Los Angeles hospitals. Richard Boone, right, played physician Konrad Styner from 1954 to 1956.

Two decades later, Robert Jarvik, the inventor of an artificial heart and the holder of a real medical degree, appeared in a series of commercials extolling the virtues of Lipitor to help lower cholesterol. One advertisement used a stunt double to illustrate Jarvik's devotion to exercise as a complement to his medication regimen. The metamorphosis was now complete: Actors had become doctors and doctors had evolved into actors.

The dramatization of medicine has long seemed a natural fit for television. "One of the vivid examples of the tactile quality of the TV image occurs in medical experience," wrote media critic Marshall McLuhan in his landmark 1964 book, *Understanding Media*. "The sudden emergence of the TV medico and the hospital ward as a program to rival the western is perfectly natural." From the earliest days of television, the leaders of the country's professional medical societies grasped the tremendous attraction the medium held for viewers and the enormous power that television could have in shaping the public's perceptions about doctors and the care they deliver.

But Hollywood can be notoriously fickle. Rather than serving up flattering images, medical dramas on television have reflected society's larger issues by offering increasingly complex—and often troubling—portrayals of doctors.

### Strong Medicine

In the 1950s, the images of the bloody carnage of both World War II and the Korean War remained fresh in the minds of many Americans. The first significant medical show on television was *Medic*, which debuted in 1954. The show aimed for an admirably high level of realism: Writers spent more than two years shadowing doctors around hospitals in the Los Angeles area to capture the routines of the physicians and the ambience of the institutions. Each



**MEDIC**

episode opened with the narrator reminding the audience that the doctor was "the guardian of birth, the healer of the sick, and comforter of the aged."

The show's budget was so small the producers couldn't afford to build a formal set, opting instead to film the series inside the same hospitals in which the writers had conducted their research. By contractual obligation, a designated representative of the Los Angeles County American Medical Association scrutinized and evaluated each half-hour episode to ensure its portrayals corresponded with the organization's public relations strategy and maintained a reasonable level of medical accuracy. Once the medical association endorsed the script, the televised episode displayed the organization's seal of approval. Interestingly, the association deemed one episode—one that depicted an African American physician character—to be racially alarming; it never aired.

By the 1960s the country's mood was changing. U.S. society was awed by the sheer breadth and power of technologies: atom bombs, jet airplanes, satellites. Antibiotics and vaccines appeared limit-

less in their power to conquer diseases that had threatened humanity for thousands of years. John Kennedy was in the White House, and his administration's New Frontier program, with its zest and enthusiasm—from the Peace Corps to the space program—had seized the public's imagination.

Two new medical dramas on television, *Dr. Kildare* and *Ben Casey*, emerged in 1961. These shows, whose scripts the American Medical Association reviewed, were as interesting in their similarities as they were in their differences. Each focused not on experienced physicians but instead on doctors in training. The first was *Dr. Kildare*, loosely based on a 1930s film character of the same name. Played by Richard Chamberlain, Kildare was boyishly handsome and exhibited a zealous innocence in his devotion to medicine as a calling. His personal needs always yielded to his patients' concerns. Issues of income, love, and marriage were noticeably absent in the plots. Kildare lived like a medical monk whose vows required him to cloister himself within the confines of the fictitious Blair General Hospital.

PHOTOS: NBC/PHOTOEST (MEDIC) AND DR. KILDARE; ABC/PHOTOEST (BEN CASEY)



# Television during the 1960s brought medicine into a raw, confident light. The best medicine was the boldest; the swiftest action, the wisest.

While Kildare labored toward the divine light of sainthood, Ben Casey was a darker character. Actor Vince Edwards portrayed him as an arrogant, forceful, and headstrong neurosurgeon who was rushed and irritable from an operative schedule punctuated by innumerable trauma cases. While Kildare was caring, solicitous, and gentle, Casey was gruff, disdainful, and prone to tell his patients what was right for them—or wrong with them. His medical authority seemed to extend far beyond his neurosurgical expertise and allowed him to opine at will on any aspect of his patients' lives, from the state of their marriages to their psychological weaknesses.

Casey's approach to disease tended to consist of aggressive, high-risk surgeries, usually experimental in nature, with a premium placed on procedures that had never been attempted. Almost all his actions took place in open defiance of hospital administrators and with disdain for government regulations. This no-holds-barred picture of "real medicine" even surfaced in the more sedate *Dr. Kildare*, when Leonard Gillespie, Kildare's senior facul-

ty supervisor, declared in one episode: "There are always risks, unforeseeable risks, but risks that must be taken. Medicine isn't worth practicing if I have to stop myself because of legal risks. Until I am free to proceed on the basis of my knowledge and skill, I am not a doctor. I am a slave to outmoded laws."

Television during the 1960s brought medicine—especially surgery—into a raw, confident light, tinged with enormous faith in the technology now available to both bedside and operating room. Doctors were portrayed as glamorous, heroic, self-sacrificing, and willing to dare risky procedures. The best medicine was the boldest; the swiftest action, the wisest. But these characters also had rebellious, defiant streaks, reflecting the emergent political and social attitudes of a new generation rising up against the traditions of the past.

The *Dr. Kildare* and *Ben Casey* storylines also introduced a new yet important theme: that of the powerful and profound relationship between a younger protégé and an older, wiser mentor. Kildare had his Gillespie while Casey was under the mentorship of the sage yet short-fused chief of surgery, David Zorba. Since the 1960s, the theme of the mentor-apprentice relationship at the heart of medical training has been a staple of every medical drama.

## Father Time

Just as the Vietnam War split the country into widely divergent political camps, the portrayal of doctors on television exposed new professional divisions as well. The main character of *Marcus Welby, MD*, which ran from 1969 through 1976 and starred Robert Young, seemed to epitomize the silent majority, with its trust in law and order and in the wisdom of seasoned leadership. In keeping with the times, Welby dished out paternal counsel to guide and restrain his younger, more radical partner.



**BEN CASEY**

*Marcus Welby, MD* received the endorsement of the American Academy of Family Physicians, an indication of the ascendancy of primary care on the U.S. health care landscape. By then the American Medical Association had abandoned its policy of overseeing and approving television programs. The association's leadership instead was becoming concerned that television dramas were raising the public's expectations beyond anything real-life practitioners could deliver. Television was depicting a success rate in resuscitations of greater than 85 percent, when the actual survival rate was well below 15 percent. The wise Welby proved able to resolve familial conflicts in 95 percent of the television episodes while tending to the medical problems of his *patient*, singular; his practice seemed to allow him the luxury of having to treat, along with the help of his younger partner, only one patient at a time.

The 1970s also brought us *M\*A\*S\*H*. Although the setting for the drama was the Korean War, it was a thinly veiled allusion to the ongoing conflict in Vietnam. The drama satirized military and political authority as well as religious mores. It underscored the inherent paradox of doctors trying to save lives in the midst of a war in which body counts were



**DR. KILDARE**

**OPPOSING FORCES:** Dr. Kildare, portrayed by Richard Chamberlain, was caring, solicitous, and gentle, while Ben Casey (Vince Edwards) was arrogant, forceful, and headstrong.



# **St. Elsewhere** took place in a grimy and under-funded inner-city teaching hospital. The physician characters now had quirks and issues.

the measure of military success. *M\*A\*S\*H* also brought a dramatic shift in the focus of the storylines. The physician characters became almost the exclusive focus of the drama. The patients and their gruesome injuries began to serve as a macabre backdrop to the main action occurring among the doctors.

Alan Alda portrayed one of the main characters, Hawkeye Pierce, as sarcastic,

cynical, and sadly disillusioned. His drinking habits often verged on outright alcoholism. He was an inveterate womanizer and showed nothing but defiance and disregard for almost any form of military protocol or etiquette.

A new kind of physician also appeared in this series: Frank Burns. Burns was a buffoon—a plodding physician who rigidly abided by rules and reg-

ulations. He was often depicted as greedy, stupid, and envious of his colleagues. *M\*A\*S\*H* showed us a world of medicine in which masterful doctors worked alongside witless ones, with all at risk of having their efforts rendered futile by the larger political context.

The early 1980s brought us *St. Elsewhere*, notable for featuring women and African Americans among the main physician



**MARCUS WELBY, MD**



**ST. ELSEWHERE**

**GROUP THERAPY:** Decades of television doctoring produced the quiet, calm family practitioner (*Marcus Welby, MD*); the zany, pressured warrior physician (*M\*A\*S\*H*); and the idealistic, young, urban health professional (*St. Elsewhere*).



**M\*A\*S\*H**

PHOTOS, CLOCKWISE FROM TOP LEFT: ABC/PHOTOEST; CBS/PHOTOEST; NBC/PHOTOEST





**HOUSE, MD**

**BUMPY RIDE:** Gregory House, the lead physician character on *House, MD*, is portrayed as a cynical yet brilliant doctor who battles both colleagues and such personal demons as narcotics addiction.

characters in the cast. *St. Elsewhere* took place in a grimy and under-funded inner-city teaching hospital. The physician characters now had quirks and issues, ranging from bulimia to domestic violence, from sexual deviancy to suicidal depression. Another new, somber note entered into the storylines. Patients could not always be saved. Many were routinely lost, and some even died as a result of physician error and incompetence.

### House Calls

The twentieth century closed out with *ER*, in which physicians were forced to deliver care in a system on the brink of collapse and patients received merciless triage out of sheer necessity. The crisis in health care delivery was viewed against a chaotic, dysfunctional backdrop. A twist that began with *St. Elsewhere* intensified, as some episodes explored the physician characters themselves succumbing to medical mishap and disease. A sense of mutual vulnerability emerged: physicians and patients alike seemed at risk of falling victim to a health care system that was running amok. Ironically, the same month *ER* debuted, the Clinton administration's bid to establish national health care reform was declared dead on the floor of the U.S. Senate.

The twenty-first century added *Grey's Anatomy* and *House, MD* to *ER* as hit medical dramas. *Grey's Anatomy* follows a

cohort of residents and attendings in a large, fictitious teaching hospital called Seattle Grace. As a medical script consultant for the show for the past three seasons, I've worked with the show's writers as they develop storylines around neurosurgical problems as esoteric as neurocystercosis and as mundane as an epidural hematoma. Doctors are depicted not just as clinicians who treat disease but also as patients who occasionally fall prey to it. In *Grey's Anatomy*, physician characters have struggled with everything from Parkinsonian tremor to post-traumatic stress syndrome to metastatic melanoma. More than ever, the world of medicine seems slightly out of focus, with a blurred boundary between physician and patient that suggests that doctors are far less heroic than human.

*House* debuted in 2004, with Hugh Laurie playing the main character, Gregory House—a misanthropic, cynical, and brilliant physician at the fictional Princeton Plainsboro Teaching Hospital. There House routinely insults, belittles, and ignores his residents and fellows on clinical rounds. Various episodes depict him physically assaulting patients, their family members, and even the occasional colleague. He performs surgical procedures for which he has neither credentials nor privileges. He administers medications to patients without their consent, and when he deems a surgery on another doctor's patient to be mis-

guided, he wheels that patient right out of the operating room. He steals hospital records, bullies patients into signing consent forms, and even treats children against their parents' wishes.

House adds personal foibles to his professional transgressions. He breaks into the hospital pharmacy to feed his addiction to pain medication, writes prescriptions for himself, and occasionally faces arrest for drug possession. Yet we root for House. He's a genius and a sociopath—a Sherlock Holmes who solves the crime but never seems able to see the victim.

### Reality TV

Doctors, so often noble icons during the early and mid-twentieth century, have thudded to Earth, and television has reflected this descent. The earlier idealistic depictions of physicians slowly eroded as the health care system became more harried, intrusive, and overwhelming. Medical dramas on television no longer portray physicians as saints but instead delve into multidimensional physician characters who often display a rebellious and sometimes even sociopathic defiance of the medical establishment.

As their portrayal has become increasingly more human over the decades, doctors have also become more accessible to the viewing audience. The public's fascination with the real drama inherent in medicine has not seemed to have faded for more than a half century. Instead, television series have evolved to place medical challenges in the larger context of real societal issues, propelled by the uncanny ability of scriptwriters to take the pulse of their audiences. ■

Allan J. Hamilton '82, FACS, is a professor of neurosurgery at the University of Arizona. He also serves as a medical script consultant to two television shows, *Grey's Anatomy* and *Private Practice*.

**DOUBLE EXPOSURE:**  
*Jurassic Park*, the 1993  
movie based on the  
bestselling book by  
Michael Crichton, led to  
an explosion of dino-  
mania—and an epony-  
mous name for a new  
ankylosaurus species,  
*Crichtonsaurus bohlini*.





Adept  
Physician,  
Prolific  
Writer,  
Master of  
Hollywood  
Michael  
Crichton  
1942–2008

BY WILLIAM IRA BENNETT

# THE LOST WORLD

**MICHAEL CRICHTON '69** was preparing to apply a cast to my right ankle, and I was taking off my shoe and sock so he could accomplish the task. There, in the bright light of a casting room, with my glasses on and my leg extended on a table, I could see to my horror that my ankle had the grubby patina of a six-year-old's at bedtime. Excuses were beside the point, but

PHOTO: DOUGLAS KIRKLAND/CORBIS

**DRAMATIC LICENSE:** For more than three decades, Michael Crichton wrote the books, crafted the screenplays, and even directed the movies that entertained millions. And in some cases, as with the 1979 movie *The Great Train Robbery*, he was a triple threat, serving as author, screenwriter, and director.



**THE GREAT TRAIN ROBBERY**

I muttered them: that my small shower had poor lighting and that I was near-sighted, sleep-deprived, and so tall that my eyes were a long way from my ankles. The “tall” part was particularly unpersuasive, as Michael topped me by six inches.

We had become foxhole buddies on our neurology rotation. All was quiet on the neurology front at Boston City Hospital that month in 1968, however, and there was little of the incipient neurologist in either of us. We became each other's willing accomplice, slipping away for a late afternoon beer and conversation. The friendship continued as we moved on to orthopedics.

Briefly Michael's “patient,” I could easily imagine him as an academic physician, the sort exemplified by the chiefs of service in Harvard hospitals. His manner was self-contained but not aloof. Rather, his style was affably imperturbable. He shrugged off my embarrassment, put the ankle where he wanted it, and, following our instructor's directions, covered it, grime and all, with a light, tidy cast. He was a quick study.

Nevertheless, I didn't think it likely that he would go on to a career in academic medicine. He was already a writer. While in college, under the *nom de plume* John Lange, he had written three or four fast-paced thrillers. Published as small paperbacks, they were easy to slip into one's pocket and read during afternoon



**JURASSIC PARK**

lectures. There was nothing ambiguous about the intention of these books; they were designed to become movies along the lines of *To Catch a Thief* or *Topkapi*.

Although I didn't know it, Michael had already written the book that would become his first movie. *The Andromeda Strain* had two sources of inspiration—Harvard Medical School's second-year bacteriology course and H. G. Wells's *The War of the Worlds*. Much of this book was, indeed, written while Michael was taking the bacteriology course. He went on to write two other books during medical school, and both of them stand up to rereading 40 years later.

For *A Case of Need*, Michael, who had joked about his height with “John Lange,” now borrowed the name of a knighted dwarf, Jeffrey Hudson, who was in the court of Henrietta Maria, the queen of Charles I. Michael often made small jokes about his height. I wasn't surprised that he would know about seventeenth-century royalty; I always took for granted how much he knew. It would have been overwhelming to ask him where he had gleaned the tidbits that were regular and entertaining parts of his conversations. Although he had a gift for fiction, his delight often seemed to be in small facts, which peppered his writing much as they did his talk.

Like the first novels, *A Case of Need* was an exercise in a standard form—that of a mystery in which a bystander is thrust by circumstances into the job of detection, competing with misguided police to identify the real culprit. The crime in question is an illegal abortion resulting in the death of a prominent surgeon's

daughter. The accidental detective is a pathologist who has for years helped a gynecologist colleague conceal the fact that he has safely and carefully performed abortions in the hospital. The book is a farrago of medical stereotypes: a surgeon arrogant to the point of sociopathy, a principled gynecologist, a street-smart nurse, an opera-loving homosexual psychiatrist, a mild-mannered and diligent pathologist. It is easy to read and often quite wry.

It is also, despite the cover of a pseudonym, quite a brave book. *A Case of Need*, published five years before the U.S. Supreme Court's decision in *Roe v. Wade*, straightforwardly addresses the distortion of values and relationships in medicine and society as a result of the nearly universal criminalization of abortion. The fact that abortions were relatively safe, Michael argued, was what made possible the large criminal market for them. Many more women were mutilated, made gravely ill, or killed by criminalized abortionists than by physicians performing the few terminations that were either legally sanctioned or disguised as another procedure. But the reality was that the substantial majority of women survived the illegal process. Thus, the black market for abortions thrived.

Although *A Case of Need* is written to a formula, it is not a morally simplistic book. The tangle of relationships that it portrays, the painful reasons for seeking an abortion, the horrible consequences of secrecy and deception, the dangers of breaking the law, and the potential damage of enforcing it are all handled with an authority that is remarkable when you

PHOTOS, FROM LEFT: UNITED ARTISTS/PHOTOFEST; MCA/UNIVERSAL PICTURES/PHOTOFEST; UNIVERSAL PICTURES/PHOTOFEST; PARAMOUNT PICTURES/PHOTOFEST; WARNER BROS./PHOTOFEST





**THE ANDROMEDA STRAIN**



**CONGO**



**TWISTER**

consider that Michael was 25 years old when he wrote the book.

His next book, *Five Patients: The Hospital Explained*, was published in 1970 as a work of journalism. The five patients of the title were all people brought to Massachusetts General Hospital for treatment: a man who has suffered cardiac arrest, another with a fever of unknown origin, a third who has almost lost his hand in a crush injury, a woman with chest pain, another with a rare presentation of lupus. The patients' stories serve as five remarkable essays not only about MGH itself, but also about the role of the modern hospital as a technological, economic, and social institution.

In certain details *Five Patients* is dated. The man with fever of unknown origin spent a month at the hospital and incurred a bill of \$6,172.55. (No, I didn't move a decimal point.) Another quaint feature of the book is the author's habit of referring to physicians only as men; no woman doctor appears in the book and no note is taken of the possibility that women would come to play a significant role in medicine.

Michael spent much of that year at MGH as a participant and an observer in the life of the hospital. He listened in on such legendary physicians as Alexander Leaf and Daniel Federman '53 as they made recommendations for diagnosis and treatment. He interviewed many of the most interesting and active leaders at the hospital. And he read very, very widely. The resulting book remains readable, informative, and formidably intelligent. One has the sense that Michael got what the hospital was

about and had an uncanny sense of where it was headed.

Perhaps one of the more striking features of *Five Patients* is the security of its tone. Here is a fourth-year medical student giving opinions with a self-assurance bordering on the magisterial. And he gets away with it. Four decades on, I mostly don't mind being guided in my thinking about hospitals and medicine by a 27-year-old.

When writing a new preface to the book in 1994, Michael had little reason to change his conclusions or his tone. He wrote, "This country must finally adopt some form of national health insurance...other industrialized nations spend less on health care and get more for their money. At the moment, our national debate on health care is in the phase of blame and recrimination.... But the truth is that everyone works within the constraints of the present system—and it is the system itself that must be changed." The same year, his television series, *ER*, premiered. It was to be, of course, a hugely successful drama of people living and working within the constraints of the current system.

Looking back on his career, it seems inevitable that Michael would have chosen fiction and film over the conventional practice of medicine. When we were students together, however, I think the choice was less clear. He did not take an internship, but if he had I think he would have been successful—if chafing at his loss of writing time. I did not see him again after graduation and have only now, after his death, returned to thinking about his relationship with medicine. In rereading his books from that time, I noticed two clues, in addition to the obvious ones, as to why he left medicine as a career.

In *A Case of Need* and *Five Patients* the most painful moments come at the beginning. Both scenes are set in emergency departments—one as fiction, the other as reporting of a real event. In both,

a young patient has unexpectedly died, and the physician must tell the family. The agony of the moment, in both books, is intense and, to my reading, heartfelt. Whether Michael privately dreaded this aspect of medical practice I can't say. Nor can I say that in turning to medical fiction he also had a didactic intention. But at the very end of *Five Patients*—having written at length about hospitals and doctors, having looked at the history of medical technology and institutions, and having made some predictions as to where they would go—he wrote, "...patients are more knowledgeable about medicine than ever before. Only the most insecure and unintelligent physicians wish to keep patients from becoming even more knowledgeable."

Michael then goes on to emphasize the importance of a knowledgeable public to medical institutions. "Hospitals are now changing," he wrote. "They will change more, and faster, in the future. Much of that change will be a response to social pressure, a demand for services and facilities. It is vital that this demand be intelligent, and informed." In *ER* Michael not only created one of the longest-running entertainments in the history of U.S. television, but he also built a bully pulpit from which to instruct about the triumphs, failures, and horrors of medical practice. ■

*William Ira Bennett '68, a psychiatrist in private practice, is also editor-in-chief of the Harvard Medical Alumni Bulletin. Michael Crichton's obituary appears on page 71 of this issue.*

Listening to patients' stories makes for good doctoring—and sharing those stories makes for good TV.

BY NEAL BAER

### **THE FINAL GURNEY HAS**

crashed through the doors of Chicago's County General Hospital. We'll see no more zaps with the defibrillator, no more emergency tracheotomies, no more pace and pathos. After 15 years, *ER*, the television series set in that fictional hospital, has ended—and Thursday nights will never be the same for me.

PHOTO: NBCU PHOTOBANK

# TALES out of







# SCHOOL

# Thinking about patients' stories as unfolding narratives made me a better doctor. My search for the nuances in those stories made me more empathetic.

I was a fourth-year medical student planning on doing a residency in pediatrics at Children's Hospital Boston when I received a script that Michael Crichton '69 had written while a Harvard medical student. The document had lain buried in a file cabinet for nearly a quarter century until a member of Steven Spielberg's production team rediscovered it. Spielberg, who remembered it fondly as a movie script he once considered directing, decided it would make a great television show. John Wells, a childhood friend of mine who had hired me to write an episode of *China Beach* before I had enrolled at HMS, was slated to produce the script. He sent it to me to find out whether it still reflected life in the emergency room.

Crichton had indeed captured the essence of the drama of an ER. At any moment anyone can burst through the doors with any sort of calamity: a teen with a gunshot wound; a pregnant woman with a distressed fetus; a man with a pole plunged through his chest. I immediately called Wells and said, "This is my life!" Although we no longer used glass IV bottles or chloramphenicol, Crichton had gotten it right. So I left Boston for what I thought would be two months to break stories with the new team of writers on *ER*.

## Doctors as Storytellers

I soon found that my experience at Harvard had prepared me for television writing in unexpected ways. During my student years the curriculum was the New Pathway, which emphasized problem-based analyses of real patient cases, the doctor-patient relationship, and the social context of medicine. To make a proper diagnosis, I learned to poke and prod for the narrative thread of a patient's complaint and to examine that patient's habits, history, and hopes. I learned to appreciate the complexity of the doctor-patient dynamic. And I



learned to anticipate the thorny ethical issues that can arise suddenly to complicate treatment.

Thinking about patients' stories as unfolding narratives helped me become a better doctor. My search for the nuances in those stories made me more empathetic. And telling my patients' stories—even by writing notes in their charts—helped me understand those patients more deeply.

Refining my storytelling skills as a doctor also helped me improve as a writer—and provided me with stories to tell. In fact, many of the stories I wrote for television were inspired by the patients, medical students, and attendings I met at Harvard. I had arrived at Warner Bros. Studios in Burbank, California, armed with more than a hundred stories based on my life as a medical student—some humorous, some odd, oth-

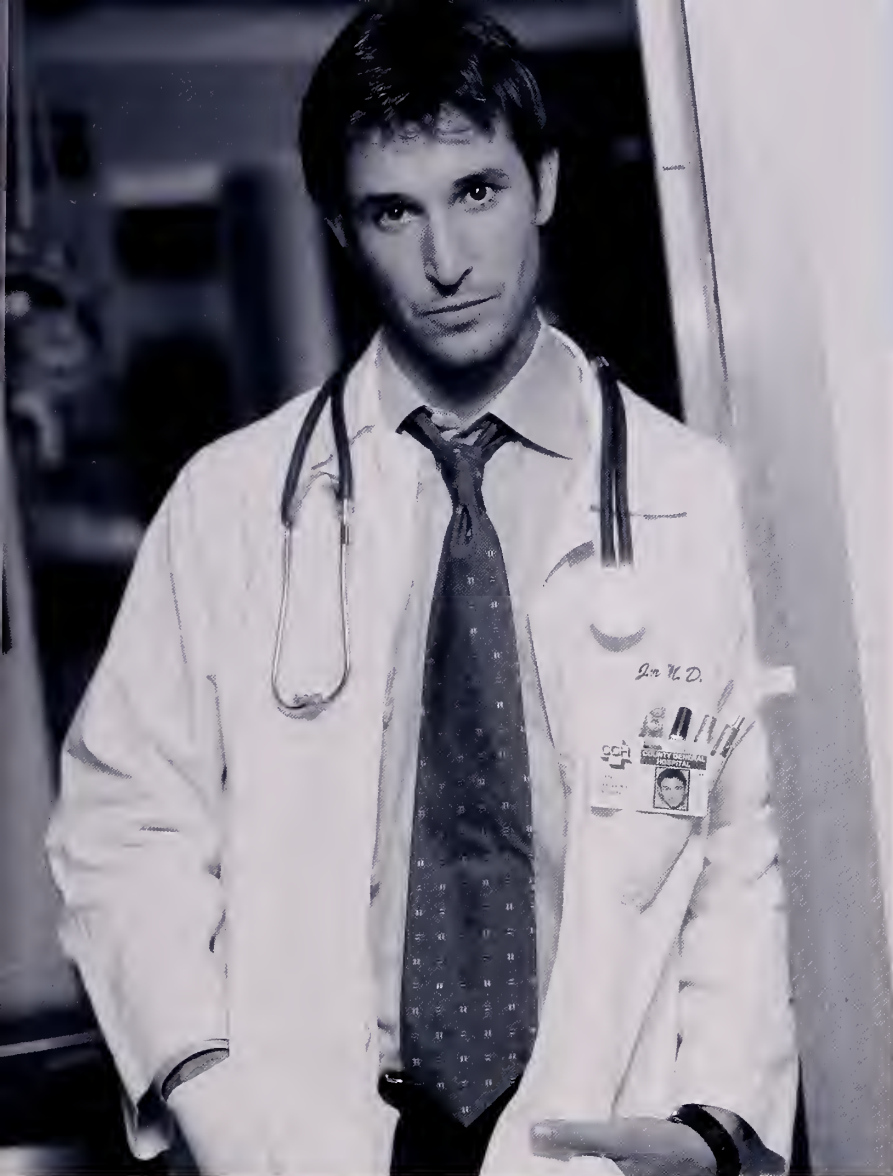
ers tragic. Those became the sources for *ER* episodes. I quickly learned, though, that they weren't enough; we would burn through at least half a dozen stories each week.

In one early episode, for example, Noah Wyle's character, John Carter, was challenged by his attending to name the capital of what was then known as Zaire. He did and was allowed to join the surgeons at the operating table. But that wasn't enough. The chief of surgery then quizzed him: "What are the borders of the Triangle of Calot?" And Carter replied, "Cystic duct, common duct, and the liver." Impressed, the chief of surgery allowed Carter to hold the retractor.

Both moments were rooted in the real-life experiences of classmates at Harvard's teaching hospitals. In fact, a certain surgical attending at one of the Harvard-affiliated hospitals *always* asked

PHOTOS: (CLOCKWISE FROM FAR LEFT) NBC/PHOTOEST, NBCU PHOTOBANK, WARNER BROS.





**SERIOUS CONDITION:** The writers of *ER* regularly touched on the gravity and pressures of the world of medicine, as evidenced here by the facial expressions of several major characters, clockwise from far left, Mark Greene (Anthony Edwards), John Carter (Noah Wyle), Peter Benton (Eriq LaSalle), and Elizabeth Corday (Alex Kingston).

that question. On the show, one of the attendings prepped Carter before he entered the OR, telling him to remember three things: cystic duct, common duct, and the liver. Carter didn't understand the significance of her advice at the time, but he appreciated her coaching when it came in handy. Details like this one transformed the audience from mere viewers to insiders who shared the joke.

Another show during *ER*'s first season provides details only someone trained as a doctor would know: When Carter performs his first lumbar puncture, the nurse tells him that his resident will give him a bottle of champagne if the tap is clear. Carter nervously inserts the needle; later, when the lab results come back, he is elated to learn that the tap had no red blood cells—and he gets his bottle of bubbly.

Stories like these opened a window onto the culture of becoming a doctor and became integral to the show's success. Before *ER*, staff writers of medical shows would use consultants to salt the scripts with occasional clinical details. *ER* changed that. Crichton's training had helped him set the stage for a show that would take us into the lives of doctors as no show had done before. And executive producer John Wells decided the best way to realize that concept would be to employ real doctors as writers for the show—a television first, to my knowledge.

It's an approach I call anthropological television. To write the kinds of stories *ER* presented, to provide the cultural minutiae that go into making a physician, one would have to be an ethnographer living among medical students and





doctors. Or one would simply need to be a doctor. Wells chose the latter.

Not only was I one of the first two doctors to write on a television drama, but I was also the first—and likely the only—medical student. To help ensure the show's veracity, we had emergency physicians working on the set of every episode; they taught the actors Noah Wyle and Eriq LaSalle how to suture by having them practice on chicken parts, pigs' feet, and eventually prosthetic devices. The actors' suturing skills eventually surpassed mine.

This approach to scripting a television show not only gave viewers a fresh take on the world of medicine, but it also had lasting effects on other television shows. Today, few medical shows on television are without a doctor-writer on staff. *House, MD* is a wonderful example. My closest friend in medical school, David Foster '95, is the show's doctor-writer, the creative force behind those rare cases we loved learning about, but seldom saw, as medical students.

But the trend toward enlisting the help of experts isn't limited to medical dramas. *CSI: Crime Scene Investigation* and its offshoots have forensic experts writing on their shows, just as legal shows now employ lawyers. Audiences have learned to crave authenticity.

### Programming Notes

It quickly became clear that viewers weren't watching *ER* just for its entertainment value. During the two years I finished my last clerkships, I shuttled



**INTENSIVE CARE:** *ER* explored the intense, long-term relationships that can form between medical professionals in its storyline involving nurse Carol Hathaway (played by Julianna Margulies) and pediatrician Doug Ross (George Clooney).

between coasts, in Boston when *ER* was on hiatus and in Los Angeles when the show was filming. It was while I was in Boston that I witnessed the strong effect *ER* was having on medical students. Thursday night viewing clubs had formed; medical students would gather to watch the show and test themselves by trying to make diagnoses before *ER*'s physicians could. The experience may have even influenced their career paths; studies show that applications to emergency medicine residency programs increased after *ER* came on the air.

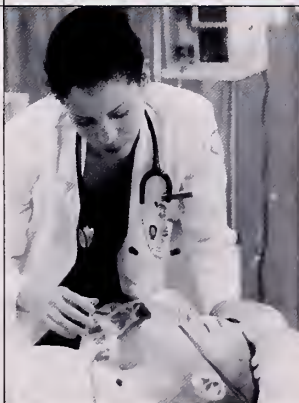
*ER* was popular with the public, too. One episode—in which Doug Ross, the dedicated yet emotionally flawed pediatrician played by George Clooney,

saved a boy trapped in a storm drain—drew a 45 share, meaning that 45 percent of the television sets in use in the nation were tuned in to *ER*. Today's top-rated *American Idol* draws numbers that pale in comparison.

But people didn't simply watch *ER*—they learned from it. For a Kaiser Family Foundation study published in *Health Affairs* in 2001, we surveyed a random sample of *ER* viewers about an upcoming episode on human papilloma virus and cervical cancer. Before the show aired, 9 percent of the study participants knew the virus caused cervical cancer; a week after the show aired, 28 percent could correctly state that relationship. Back then, 30 to 40 million viewers were watching *ER*, which translates into at

PHOTOS: WARNER BROS. (ABOVE AND BOTTOM LEFT); PATRICK ECCLES/WMER BROS.; GETTY IMAGES

## ER Through the Years

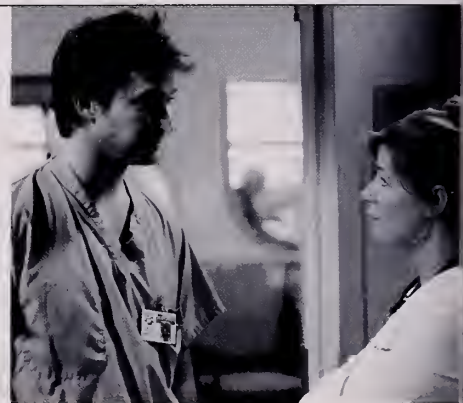


1994

**BOTTLE OPENER:** Actual toiles from medical school gave a high degree of realism to the television show *ER*. In its opening season, John Corter, a third-year medical student, performed a red-cell-free lumbar puncture—a champagne top—earning him a bottle of bubbly and the cheers of colleagues.

1996

**PRIVATE PRACTICE:** *ER* took a prime-time leap when Jeanie Boulet, a physician assistant on the show, tested positive for HIV. Like many real people who were then living with the virus, Boulet sought treatment privately, fearful of coworker reactions and career-ending workplace repercussions.





# Our approach to scripting *ER* not only gave viewers a fresh take on the world of medicine, but it also had lasting effects on other television shows.

least 8 million people learning about human papilloma virus—the first step toward prevention. The *Health Affairs* study also showed that about one in seven viewers had contacted a doctor or other health care provider about a health problem after seeing an episode of *ER*.

The *ER* scriptwriters took the *Health Affairs* findings seriously. In fact, during the show's infancy a *New England Journal of Medicine* article had taken us to task for showing unusually high rates of success in cardiopulmonary resuscitation. In reality, CPR works infrequently, and, when it succeeds, it's often accompanied by serious sequelae. After that article was published, we tried to make the show as accurate as possible, although we continued to take dramatic license with the time it takes to get lab results.

*ER* also educated viewers on social issues. We delved into many of the controversies surrounding medicine today: cost, privacy issues, access, the impact of new technologies. And we were the first prime-time television show to present a main character with HIV, Jeanie Boulet, portrayed by Gloria Reuben. Before *ER*, diagnoses of HIV infection were presented as death sentences; we showed that someone with the virus could lead a full life.

My work on *ER* taught me how powerful doctors' stories can be, how they move people to tears—and even to action. I've been lucky to be able to take personal stories that have challenged my way of thinking, angered me, or shaken me to my core and use them as inspiration for *ER* and for the show I now write and produce, *Law & Order: Special Victims Unit*.

I've witnessed, for instance, too many children rushed to emergency rooms with gunshot wounds. My role as a writer has allowed me to transform this personal experience into a public story: I've written several episodes of *ER* and *SVU* about gun violence. I know such stories have had an impact, not only from the studies we've done, but also from the many times people have told me that a story from *ER* or *SVU* made them see the world differently or compelled them to consider another point of view.

## Live It, Write It, Share It

All doctors have stories from our practice of medicine that we just can't shake. But we don't need to be television writers to bring those stories to the public. Outlets for storytelling are legion. We can write op-ed pieces, present on grand

rounds, testify before legislatures, host blogs, teach, compose poetry.

I have, in fact, turned to the Internet to share another story that has moved me deeply: the crisis of 15 to 20 million children orphaned by AIDS in Africa. With partners from Venice Arts, a nonprofit organization that introduces children to photography and filmmaking, I've visited Africa several times to teach photography to HIV-infected mothers in Cape Town, South Africa, and to AIDS orphans in Maputo, Mozambique.

We post their photographs online so the women and children can share their stories with people worldwide. And we present this work to policymakers and to college students to stimulate action. I believe I have a responsibility as a physician to alert people to the orphans' plight.

But it isn't my responsibility alone. And it isn't my opportunity alone. Each of us has stories to tell. And when we share them, we can begin to change the world. ■

Neal Baer '96 has been executive producer of *Law & Order: Special Victims Unit* since 2000. Before that, he served as a staff writer and eventually as an executive producer of *ER*. To learn more about his photography project in Africa, *The House Is Small but the Welcome Is Big*, visit [www.thehouseissmall.org](http://www.thehouseissmall.org).

### 1998

**NO DO-OVERS:** The specter of medical mistakes ran throughout the series. In one story, Elizabeth Corday, a British surgeon who repeated her internship so as to earn her U.S. license, worked a 36-hour shift. In her sleep-deprived state, she miscalculated the dosage of an injection given to a patient.

### 2000

**COPING MECHANISM:** The toll that the practice of medicine takes on individuals was threaded throughout the storylines. In the final season, John Carter and Abby Lockhart, a nurse who later earned her medical degree, coincidentally attended the same Alcoholics Anonymous meeting.

### 2009

**WISHFUL THINKING:** The pressure of life-and-death decisions occupied the final season of *ER*. Neela Rasgotra, a surgical intern, finds herself dreaming of decisions she has made during her years in the emergency unit, conjuring alternate endings that ease suffering and allow patients to live.



A blonde bombshell,  
a death on the dunes,  
and a handsome leading  
man are all part of  
Harvard Medical School's  
celluloid history.

BY MASSAD GREGORY JOSEPH

# CINEMA VERITAS

## IT WASN'T A DARK AND STORMY NIGHT

on the Quad; it was simply film noir. Boston's first foray into cinema history occurred in the late 1940s when Hollywood moviemakers descended on the Hub

to shoot a murder mystery. Initially titled *Murder at Harvard* but distributed as *Mystery Street*, the film offered celluloid tourism of Charlestown, Scollay Square, Cape Cod, Harvard Yard, and that marble marvel Building A, today known as Gordon Hall.

Why Building A? For that answer, we need some context. It is night. A young woman hurries down the stairs of her rooming house and dashes for the hall phone. She's in a pale, satiny dress-

ing gown, and she shows a bit of leg in her headlong rush.

You just know things aren't going to go well for her.

She dials, she demands, she receives unheard promises. And she leaves for work at a nightclub, the Grass Skirt. That's right, the blonde is a B-girl.

Hours pass, promises go unfulfilled, and the now angry woman calls again, this time threatening to show up uninvited. A clandestine meeting is set.

Circumstance offers her transport. A drunken young man must move his car. She offers to help. In his alcoholic fog, he believes he's going to Boston Lying-In Hospital, to his wife and the dead infant who would have been their firstborn. The woman, however, has other plans and steers the car toward Cape Cod.

The man protests, they quarrel, and the Grass Skirt gal maroons the wayward husband and heads for her assignation amid sea grass and sand dunes. She makes the rendezvous; recriminations ensue. Moments later, she's shot dead and carried to a sandy grave. The film then brightens; the young husband is receiving an insurance check to cover the cost of his "stolen" car. He'll pay for that lie later.

To this point during my viewing of the movie, I was comfortably entertained:







**MORE THAN SKIN DEEP:** In the 1950 movie *Mystery Street*, Ricardo Montalban (left) plays a detective who works with a Harvard Medical School professor, played by Bruce Bennett (right), to solve a murder that occurred on Cape Cod.

A story I had started watching because it was partly set at Harvard Medical School was turning out to be a solid film noir drama. And although it wasn't exactly shaping up to be *The Maltese Falcon*, I wanted to know who had done the deed.

Then the movie offered me something to pique my personal interest. I was to be guided down this mystery's path by one Dr. McAdoo, an HMS expert in forensic science, modeled after a real-life HMS professor of legal medicine: George Burgess Magrath, Class of 1898. Ah, I thought, a police procedural *and* a fiction of an actual alumnus. I moved closer to the television screen.

A skeleton is found—a birder discovers it—and a Cape Cod detective, a Lieutenant Morales played by a young and dashing Ricardo Montalban, teams up

with McAdoo to assess the remains. The skeleton tells McAdoo the victim was female; the bones of her feet hint that she'd been a dancer. Dogged paperwork by Morales yields pictures of far too many missing women. To see whether the skeleton had belonged to one of the missing, the two men huddle in a darkened room and watch as each woman's face is projected against the body's skull. A match is made and, before long, so is the link between the young woman and the young husband. He is accused and jailed.

Morales begins to seek evidence for a conviction; McAdoo, man of science, continues to seek just the facts. Together they set a mean pace. Together, too, they begin to realize they may have the wrong man. Clues, when read by McAdoo, lead Morales in a new direction. The real cul-

prit is found, chased through a train yard, and finally apprehended. The detective and the doctor get their man.

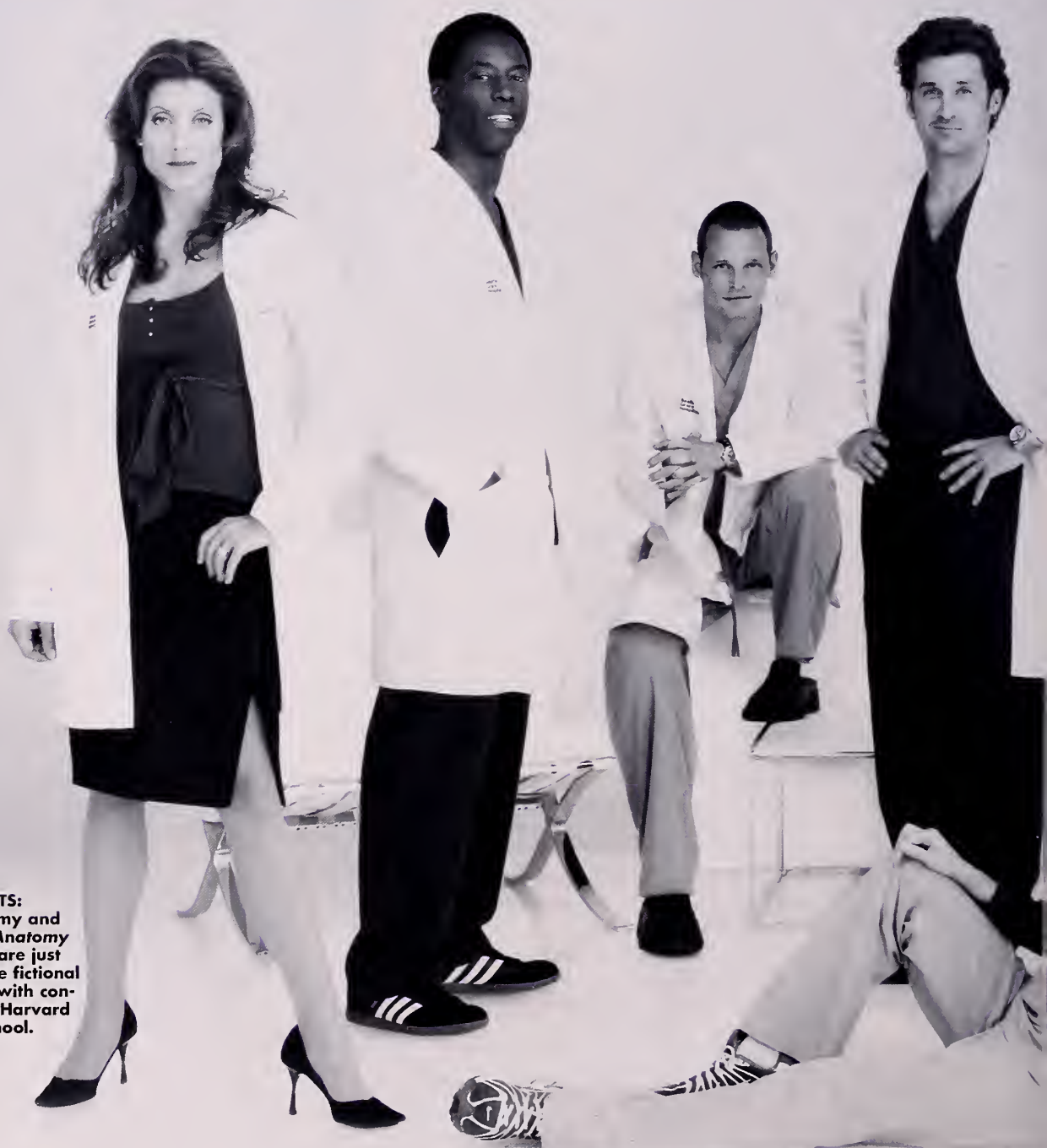
Morales calls the wife of the once-accused to tell her the murder charges will be dropped. He doodles while he talks, and, as he hangs up, the camera peeks over his shoulder. There, in block letters, is the film's last word: "HARVARD."

There it was: Harvard Medical School had saved the day. The moviemakers—who had come to Boston to shoot a dark fiction—had succeeded in hitting a luminous fact. ■

Massad Gregory Joseph '77 is a dermatologist in South Pasadena, California. To view the movie's trailer, which includes a statement of gratitude to HMS, visit <http://alumnibulletin.med.harvard.edu/spring2009/mysterystreet.php>.

Whether penning lines for *House, MD* or producing independent films, these Harvard doctors always have an audience.

# SCRIPT



**ROLE CREDITS:**  
Dr. McDreamy and his *Grey's Anatomy* colleagues are just a few of the fictional physicians with connections to Harvard Medical School.



# DOCTORS

BY JESSICA CERRETANI



# ALLAN HAMILTON '82

Neurosurgeon Derek Shepherd runs his hand through his perfectly coiffed hair as he worriedly reviews an MRI scan. His patient, a young pregnant woman, is suffering from mini strokes; he must determine whether to perform a risky operation to save her life. When she dies during surgery, he is devastated.

The plot is likely familiar to fans of ABC's medical drama *Grey's Anatomy*, which follows the lives of physicians at a fictional Seattle hospital. While Shepherd gets his matinee-idol looks from actor Patrick Dempsey, his experiences come courtesy of Allan Hamilton '82. The real-life neurosurgeon is, he laughs, "consulting for Dr. McDreamy."

For Hamilton, though, television was never part of the plan. He was already chief of neurosurgery at the

University of Arizona Health Sciences Center and executive director of the Arizona Simulation Technology and Education Center at that school's College of Medicine when Hollywood came calling. "They wanted to use 3-D neurosimulation and virtual reality techniques in an episode of *Grey's*," he explains. The writers contacted Hamilton—an expert in these techniques—several times with technology-related questions before he was eventually

asked to consult for all neurosurgical issues on the show.

As a consultant, Hamilton reviews scripts and helps fit neurological diseases to suggested storylines while keeping the details as accurate as possible. He knows both patients and physicians watch the show closely: patients ask whether a treatment shown on an episode is suitable for their condition, while his peers at a recent talk about stem-cell research wanted to know "what's happening with Izzie," one of the show's more melodramatic characters.

Hamilton credits his time at HMS with his taste for drama. "At Harvard and its teaching hospitals, I was surrounded by larger-than-life characters, such as Gerald Austen [55] and Judah Folkman [57]," he says. "They were so impressive, in the heroic mold. Doctors aren't gods, but if they come close, it's at Harvard."

His involvement isn't limited to technical aspects. In preparing for the difficult storyline in which Shepherd loses a patient, Dempsey contacted Hamilton to ask how a real doctor might react in the situation. Hamilton is no stranger to those emotions; the plot is often based on his own experiences. The case in question is rooted in that of a patient who died on his operating table. "Losing a patient is one of the loneliest feelings in the world," he says. "I was impressed Patrick wanted to convey that realistically."

For all his attempts at accuracy, Hamilton still finds parts of the process surreal. On a recent visit to the set, for example, he chatted with James Pickens, Jr., who plays the chief of surgery. "I found myself saying, 'we're both chiefs, I love your work,'" Hamilton says. "I had to remind myself that he's an actor." Likewise, he marvels at the set itself: the hospital's main staircase leads nowhere, the cabinets are empty. "When I saw for the first time what happens there," he says, "I was wide-eyed, just like any other fan." ■



**"I was surrounded by larger-than-life characters.**

**Doctors aren't gods, but if they come close, it's at Harvard."**

PHOTOS: ABC/PHOTOEST (PREVIOUS SPREAD); KRISTEN SPINNING (THIS PAGE)






## NEAL BAER '96

The script had lain dormant for a quarter century before it landed on the desk of Neal Baer '96. Yet the story—written by Michael Crichton '69 while at HMS—still rang true. “Michael had captured what it’s like to be a medical student, a resident, an attending,” says Baer. “It was told from a doctor’s perspective, and

I was really taken with it.” That script became a television pilot. At the request of the producer, a childhood friend, Baer flew to Los Angeles to help write episodes of the show. With his family in Boston, Baer intended to return in two months. Instead, he says, “I stayed seven years.”

The show, of course, was *ER*. Baer became the first medical student to be a staff writer on a television program,

completing his internship in pediatrics at Children’s Hospital Los Angeles during production hiatuses. “That gave me hundreds of experiences, which became things that happened to Noah Wyle’s character,” says Baer. “Being puked on, peed on, ordering too many or not enough labs—it was all grist for the mill.” By the end of his stint with *ER*, Baer had finished his medical training and become one of the show’s executive

 “When you’re writing a story with characters, it’s helpful to have training that emphasizes narrative.”

producers. He now holds the same title at another NBC drama, *Law & Order: Special Victims Unit*.

Baer entered show business before medical school. He already had several degrees, including two master’s degrees from Harvard, and had spent a year at the American Film Institute as a directing fellow. He dabbled in the craft for a few years, writing an episode of *China Beach* and an after-school special about sexually transmitted diseases.

“I realized I was writing stories that were medically oriented,” says Baer, whose father and brothers are surgeons. “I was interested in medical school and thought I should try it.”

Baer loved medical school. The fact that the HMS curriculum at the time, the New Pathway, was embedded in storytelling was a happy coincidence. “We learned how to elicit patients’ stories and uncover the nuances of their narratives,” he explains. That technique became a principal feature of the way Baer approached screenwriting, too.

“When you’re writing a story with characters,” he says, “it’s helpful to have training that emphasizes narrative and ethical elements, because TV and movies are about conflict.” The approach has succeeded on *ER* and on *SVU*, where Baer has written about such topics as transgendered children and skeptics who deny the link between HIV and AIDS.

Baer’s passion for storytelling is central to another recent project. He is the co-creator of *The House Is Small* but the *Welcome Is Big*, an initiative that explores the impact of HIV/AIDS through the eyes of women and children in South Africa and Mozambique by giving them cameras to document their lives in photographs. While his schedule prevents him from seeing patients, Baer continues to give their narratives a voice. “I’m very fortunate,” he says, “to have television and film to help me tell those stories.” ■




## ROBERT HUIZENGA '78

For most HMS students, the fourth-year play is a time to generate a few laughs. For Robert Huizenga '78, though, this tradition sparked a lasting interest in show business. "As silly as it was," he says, "that experience was in many ways much more valuable to me than reading

another textbook." Huizenga, currently most visible as the physician who helps contestants shed pounds on NBC's *The Biggest Loser*, helped write and costarred in his class's production of *Stoma*, a spoof of *Coma*, a medical thriller by former HMS faculty member Robin Cook. Huizenga shot hoops with Cook, who advised students interested in the craft to write at least an hour a day.

That advice proved sage for Huizenga, who penned the 1995 exposé *You're Okay, It's Just a Bruise* about his experience as team internist for the Los Angeles Raiders. Huizenga resigned from that

position in 1990, disillusioned by drug use and the pressure on athletes to play while hurt. "Thirty-three former players allowed me to share the medical side of their participation in professional sports," he says. The book brought national recognition to Huizenga, who had previously been a medical correspondent for the news program *BreakAway*; a script consultant for such television shows as *Trapper John, MD*; and even an actor playing a neurosurgeon on the soap opera *Rituals*. Huizenga's book eventually caught the attention of director Oliver Stone, who partly based his 1999 film, *Any Given Sunday*, on it.

 Although Huizenga is a natural on camera, his greatest contributions to the show have occurred behind the scenes.

A few years later, Huizenga's experience with the Raiders opened another door. A producer friend contacted him with an idea for a television show about people undergoing major physical transformations without plastic surgery. And so *The Biggest Loser*, a show that follows obese people as they compete to win money by losing weight, was born.

Although Huizenga is a natural on camera, his greatest contributions to the show have occurred behind the scenes. During his stint with the Raiders, one of his jobs had been to help linemen keep weight on, a feat that proved challenging with the team's intense two-a-day workouts. Huizenga suspected his time with the Raiders might offer useful lessons for *The Biggest Loser*. The intense exercise that had prevented his players from keeping pounds on might help obese contestants keep them off. "That observation," he says, "led to what has become a salient feature of the show."

Frustrated that the show was being viewed as unrealistic, he set out to prove that extraordinary weight loss could also be achieved at home, without cameras and monetary incentives. He formed a study group of rejected potential contestants, put them on a rigorous exercise regimen, and tracked their progress. Six months later, members of the group had lost an average of 65 pounds, results similar to those achieved on the show.

Huizenga has several new projects in the works, including a reality program based on grand rounds. Yet showbiz, he says, "is just something fun I do on nights and weekends." He has a private practice in Beverly Hills and is an associate professor of clinical medicine at the University of California, Los Angeles. Despite his schedule, Huizenga still preserves one tradition he began at HMS: writing. "My goal is never just to be on TV," he says. "It's to put emotions in print. And the rest comes from that." ■



# JOE BREWSTER '78

"I want to make it clear that what I do is *not* 'Hollywood,'" says Joe Brewster '78. "It's at the other end of the spectrum." An independent filmmaker whose work centers on the themes of cultural, community, and individual struggle, Brewster is far removed from the glitz and glamour of Tinseltown—literally.

Based in Brooklyn, he operates in two vastly different worlds: as founder of the Rada Film Group, with his wife, Michèle Stephenson, and as an attending psychiatrist at Harlem Hospital and an assistant clinical professor at Columbia University.

Such dichotomy is familiar territory for Brewster, who grew up as a self-described geek in South Central Los Angeles. "To be obsessed with science and letters wasn't necessarily appreciated in that community then," he explains. "So I hid that part of myself." After completing a residency at McLean Hospital, he decided to pursue another obsession

and began taking film classes at the New School for Social Research in New York City. Today, he juggles his work as a psychiatrist with running the Rada Film Group and raising two boys with Stephenson, a human rights attorney.

The theme of duality is an undercurrent in many of their films, including *An American Promise*, which recently received a spot in Robert De Niro's Tribeca All Access development program. That documentary, still being filmed, chronicles a dozen years in the lives of two African American boys attending an elite Manhattan prep school. "We're looking at the ways they accli-

mate," Brewster says, "and we're exploring why, in general, African American boys don't do well in such an environment."

The filmmakers' elder son, one of the boys featured in *An American Promise*, also appears in their 2008 documentary, *Slaying Goliath*, which follows the parents of boys on a Harlem basketball team as they travel with their children to Florida for a national championship game. The film, Brewster says, isn't the typical sports movie. "It's really more of a tragedy. We look at the families and their expectations for what basketball will do for them—and watch them self-destruct when those goals aren't met."

Brewster has also produced several award-winning dramas, such as *The Keeper*, a story of a prison guard who helps a Haitian immigrant falsely accused of rape. The 1996 film, which Brewster also wrote and directed, drew on his experiences counseling inmates at the Brooklyn House of Detention. The similarities to his own life don't end there: Like Brewster, the lead character in his 2003 film, *The Killing Zone*, is a psychiatrist, whose son is played by Brewster's elder son.

Brewster's work as a psychiatrist informs his filmmaking in other ways. "Making a film involves many people working together," he explains. "Being a psychiatrist helps me with that because it makes me a good listener."

As with his approach to filmmaking, when it comes to finding an audience for his work, Brewster thinks outside the box. "Ticket sales are important," he says. "But the Web is a really powerful way to get our message to people." He and Stephenson draw on their new media skills to create documentaries and Internet-friendly shorts that non-profit clients can use on their own websites to drum up interest and aid in fundraising. It's a way of working that reflects their activist roots. "We're showing that film is not a luxury," he says. "It's something for everyone." ■



**"Making a film involves many people working together. Being a psychiatrist helps me with that."**




## ERROLL BAILEY '84

By day, Erroll Bailey '84 helps heal the delicate bones and muscles of his patients' feet and ankles. After hours, the orthopedic surgeon trades his scalpel for a keyboard and a craft no less intricate—or rewarding. A partner at Atlanta's Resurgens Orthopaedics, he moonlights as a screenwriter and film producer.

Bailey's foray into film began almost by chance. "I'd never thought about being a writer," he admits. "But I felt I had a good story to tell." That story, the tale of a homeless man with supernatural powers who serves as a guardian angel to a troubled African American

teenager, became a manuscript. On a cruise ship in the Caribbean, Bailey struck up a conversation with a fellow passenger, who turned out to be a book editor and who asked to read his manuscript. Bailey's novel, *Mr. Dream Merchant*, was published in 1998.

 **To his surprise, Bailey has found his work in film parallels his time at HMS.**

The book's inspirational message soon caught the attention of Hollywood producers. Bailey adapted his novel into a screenplay, but the special effects necessary to the plot made funding difficult. Still, the seed had been planted. "The experience was like Filmmaking 101 for me," says Bailey. "I decided to take what I had learned and keep going." He tried his hand at another screenplay, this one the tale of six childhood friends who reunite after the death of their Little League coach and mentor. The resulting film, *The Last Adam*, which was shot in just three weeks, won the Southeastern Media Award at the 2005 Atlanta Film Festival.

To his surprise, Bailey has found his work in film parallels his time at HMS. "It was disconcerting to interact with people from an entirely different discipline—film—and to lead in a field I wasn't trained in," he admits. "It reminded me in many ways of my internship, always changing services, not having a handle on anything, yet having responsibility." As he had on the wards, Bailey quieted his nerves and saw the process through. "Becoming a doctor gave me the confidence to trust myself," he says. He now heads his own production company, Descending Dove Productions.

Medical school gave Bailey—currently at work on the screenplay for a romantic comedy tentatively called *House Calls*—another push. As a student at HMS, he often played basketball with a Hollywood heavyweight: novelist Robin Cook, then a faculty member at the School. "My classmates and I used to ask him how he managed to practice medicine, teach, and be a best-selling author," says Bailey. These days, the surgeon-turned-screenwriter is facing those same questions himself, with an answer that's part mantra, part counsel to fellow physicians interested in the business: *Just do it.* ■



# DAVID FOSTER '95

On the hit television series *House, MD*, the curmudgeonly title character uses a range of diagnostic ploys to identify rare medical cases in his patients. Though vastly different from the character whose lines he helps pen, David Foster '95 shares that same passion for discovery. "The ability to delve into a patient's condition and use both logic and leaps of faith to make a diagnosis is why



many of us went into medicine," he says. "It's a privilege to listen to patients—they tell fascinating stories."

Such stories inform the fictional cases that Gregory House and his team explore, from that of a jazz musician who can't breathe to that of a patient whose pain is triggered by a swallowed toothpick. "There's a synergy between practicing medicine and writing," says Foster, who notes that combing the medical literature for stories has an added benefit: keeping up with research. "Writing for *House* serves as a great kind of CME program," he laughs.

As the only physician on the show's writing staff, Foster assists with the medical aspects of all scripts and has written eleven episodes himself. He credits his interest in writing with an elective medical literature course at HMS. The class—whose alumni include television producer Neal Baer '96 and *New Yorker* scribe Atul Gawande '94—was, he says, "incredibly good fun."

Yet Foster's path from Harvard to *House* wasn't a direct one. After his residency, he practiced at Boston's Dimock Community Health Center, running a detox program and providing care to patients. Occasionally Baer, already established in the entertainment industry, sent a project his way, like consulting on the television show *Gideon's Crossing*.

Then came the opportunity to work on *House*. The show was not expected to be successful. After all, it had a little-known British actor playing a cynical American doctor with a Vicodin addiction and a knack for diagnosing rare disorders unknown to most of the viewing public. Yet the program overcame those odds to receive critical acclaim—and high ratings. Five years later, Foster is a full-time staff writer with fond memories of his time practicing in Boston. "I used to be a doctor who wrote a little," he says. "Now I'm a writer who doctors a little." ■

Jessica Cerretani is assistant editor of the Harvard Medical Alumni Bulletin.



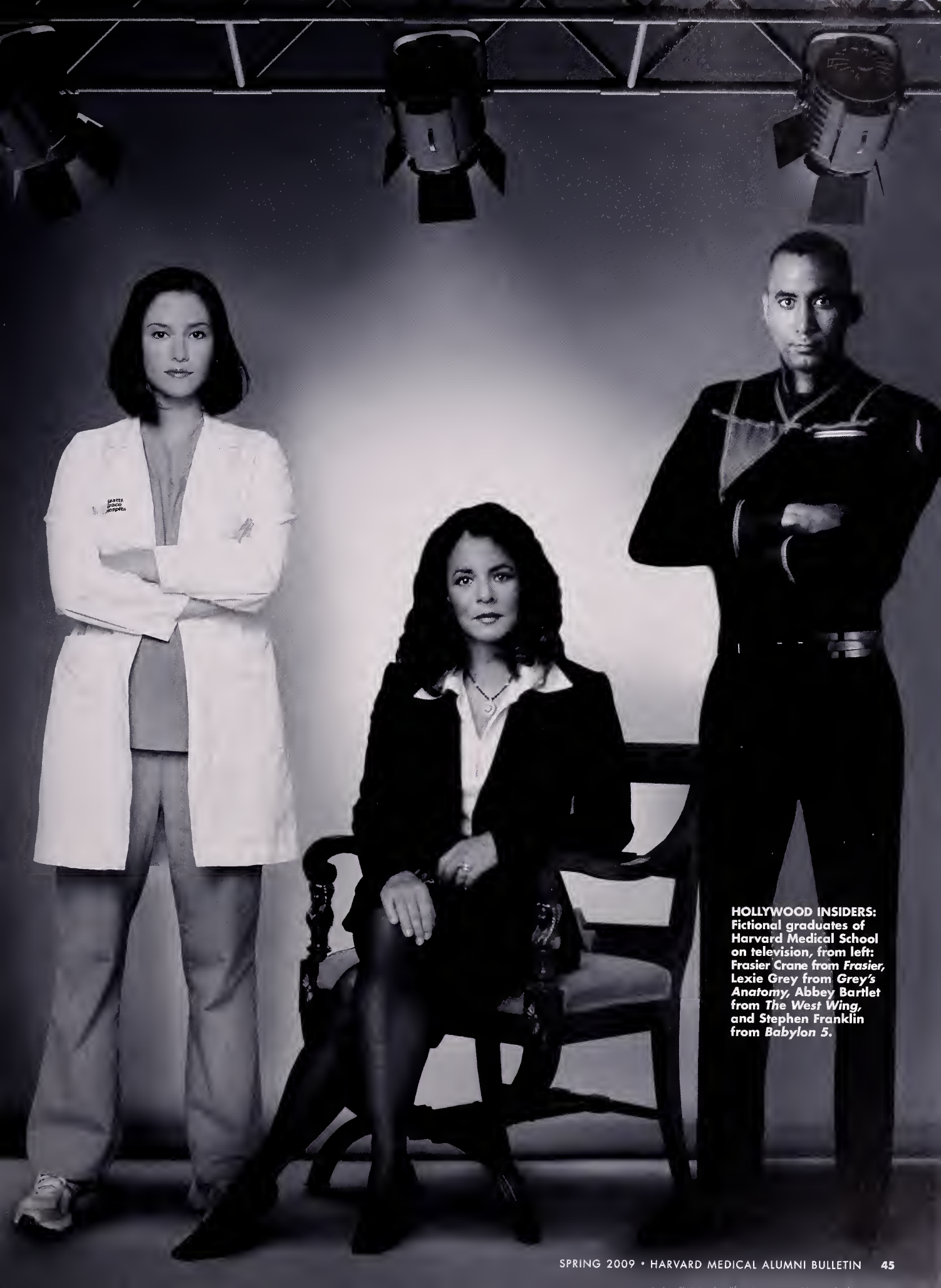
**"It's a privilege to listen to patients—they tell fascinating stories."**



# WE'RE READY FOR OUR CLOSE-UP

One believes he's God; another performs exorcisms. One commits murder, while another merely hurls cats in fits of pique. Meet the fictional graduates of Harvard Medical School. BY PAULA BYRON





**HOLLYWOOD INSIDERS:**  
Fictional graduates of  
Harvard Medical School  
on television, from left:  
Frasier Crane from *Frasier*,  
Lexie Grey from *Grey's  
Anatomy*, Abbey Bartlet  
from *The West Wing*,  
and Stephen Franklin  
from *Babylon 5*.

# T

## HE LAWYER TAKING THE

deposition wants to know: Does Jed Hill have a God complex? The surgeon—his hair sleek, his suit impeccable, his tie crimson—answers with quiet authority.

"I have an MD from Harvard. I am board certified in cardiothoracic medicine and trauma surgery. I have been awarded citations from seven different medical boards in New England. And I am never, ever sick at sea.

"So I ask you," he continues with a slow stroke of his chin, "when someone goes into that chapel and they fall on their knees and they pray to God that their wife doesn't miscarry or that their daughter doesn't bleed to death...who do you think they're praying to?"

The surgeon leans forward and concludes with a taut curve of his lips, part smirk and part sneer: "You ask me if I have a God complex. Let me tell you something: I am God."

With that pronouncement, Alec Baldwin's self-consecrated surgeon in the 1993 thriller *Malice* became a cinematic icon. But he's not just the archetype of imperious doctors or even, as the plot unfolds, of rakish swindlers. He also embodies Hollywood's take on Harvard Medical School graduates: brilliant, arrogant, and deserving of plot twists.

### School of Marred Docs

Harvard Medical School has long received more than its share of attention from Hollywood. When a fictional screen doctor's alma mater is identified, in fact, it's disproportionately likely to be the School.

Name recognition undoubtedly plays a role. Harvard, the oldest college in the United States and often the first in academic rankings, had become a brand name even before Ishmael declared, in the 1851 novel *Moby Dick*, "A whale-ship was my Yale College and my Harvard." And the Medical School has been no slouch; in the two decades *U.S. News & World Report* has been ranking research-oriented medical schools, Harvard has yet to slip to second place.



Often HMS seems merely an easy reach for screenwriters; the psychiatric resident who clashes with his morally flexible mother in the 2002 movie *Laurel Canyon* and the medical resident intent on romancing women in the 2006 movie *Ways of the Flesh* could have graduated from any school.

Occasionally the choice of HMS as an alma mater does seem thoughtful: Wilbur Larch, a doctor who runs an orphanage in *The Cider House Rules*, earned his degree from the School; the grandfather of the character's creator, John Irving, was a member of the Class of 1910. And sometimes HMS acts as a marker for intelligence. Alumna Lexie Grey, a surgical resident on *Grey's Anatomy*, has a photographic memory, a knack that earns her the nickname Lexipedia when she remembers not only a neurovascular disease mentioned in an obscure otolaryngology journal, but also the journal article's volume, issue, and page numbers.

For the most part, though, the composite fictional portrait of HMS graduates that has emerged over the past few decades has been unflattering, with doctors falling into a limited range of caricature, from supercilious surgeons to patronizing pathologists to irritable internists. John Becker, an HMS graduate on the television sitcom *Becker*, for example, bristles with hostility. "I will kill you," he promises a colleague. "And then I'll use my powers as a physician to bring you back to life. And then—I will kill you again!"

### The Divine Right of Kings

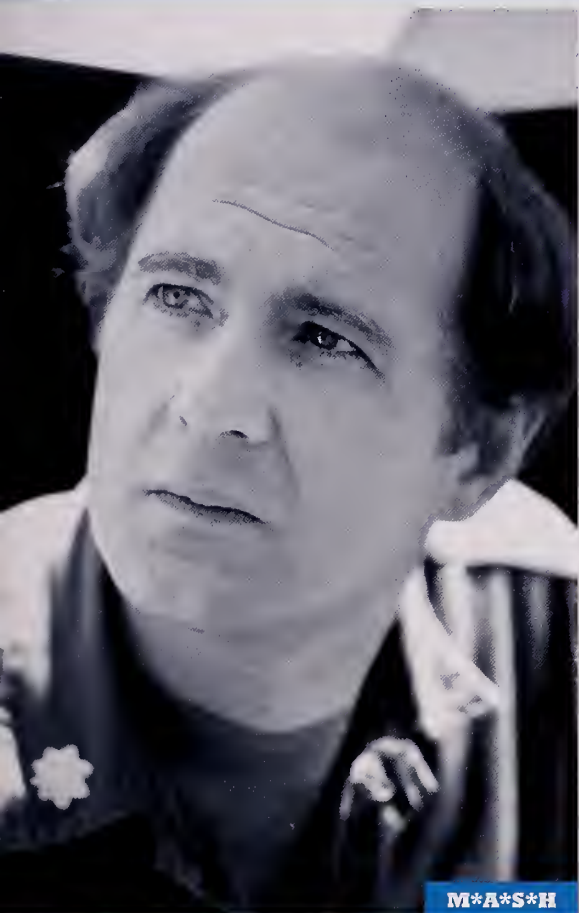
HMS resides at the intersection of two institutions often considered synonymous with condescension: Harvard and U.S. medicine. So it may come as no surprise that the characteristic Hollywood most commonly bestows upon the School's fictional graduates is arrogance.

Some fictional alumni grow arrogant as a result of their power to save lives. Take Stephen Franklin, a twenty-third-century graduate of the School. As chief medical officer on the science fiction series *Babylon 5*, he compassionately cares for a range of alien life forms. When he fails to save the lives of several wounded Minbari—members of a humanoid species whose cranial crest resembles the bony frill of a dehorned styracosaurus—he autopsies one of

PHOTOS: CLOCKWISE FROM TOP: NEW LINE CINEMA/COLUMBIA PICTURES/PHOTOFEST; CBS/PHOTOFEST; MPMAX/PHOTOFEST



# When a fictional screen doctor's alma mater is identified, it's disproportionately likely to be Harvard Medical School.



**M\*A\*S\*H**



**THE CIDER HOUSE RULES**

**LABOR IN VAIN:** While Wilbur Larch (clockwise from bottom left) devotes himself to the care of orphans, other fictional graduates, including Jed Hill and Charles Winchester III, devote themselves to the nurture of their own egos.

the aliens to understand its anatomy and physiology, in the hope of being able to rescue future patients.

Yet even Franklin echoes Jed Hill's self-aggrandizing beliefs. When his space station commander demands to know who asked *him* to play God, Franklin retorts, "Every damn patient who comes through that door, that's who! People come to doctors because they want us to be gods.... They want to be healed and they come to me when their prayers aren't enough. Well, if I have to take the responsibility, then I claim the authority too."

Other fictional graduates flaunt not their own sense of divinity so much as their divine rights as Harvard alumni. In one episode of the television series *Frasier*, psychiatrist Frasier Crane complains to his station manager about the prankster whose call-in radio program follows his. "I did not spend eight grueling years at Harvard," he fumes, "to be mocked by that juvenile jackass!"

"Shameless!" she cries.

"Oh, he's beyond shameless!"

"I'm talking," she says, "about the way you manage to get Harvard into every conversation!"

The psychiatrist just can't help himself. Minutes later, to bolster his argument, he declares, "I am a doctor! I went to..." He trails off as he catches the station manager's withering look and finishes, with an embarrassed bobble of his head, "...medical school!"

Still other fictional graduates vaunt the exquisite pedigree that had made Harvard their only possible choice for medical school. Charles Emerson Winchester III, a Korean War surgeon on *M\*A\*S\*H*, speaks in lofty, nasal tones. "Due to my background and breeding," he proclaims, "it was inevitable that I attend the finest schools: Choate, Harvard..." to which his fellow surgeon Hawkeye Pierce helpfully adds, "...the Massachusetts Institute of Snobbery!"

## The Twilight Zone

While many fictional matriculants cultivate monstrous egos, others are simply monsters. One of the

**Not all the School's** fictional graduates are arrogant, and not all play God. But most are extreme, if not in character, talent, or immortal status, then in storyline.



**TWILIGHT**

more sympathetic screen characters to have attended the School is, in fact, a vampire. As a victim of the 1918 flu pandemic, Edward Cullen—the smoldering-eyed undead hero of the 2008 movie *Twilight*—had been dying in a Chicago hospital when a vampiric physician took pity on him, plunged venom into his neck to lend him immortality, and adopted him.

Now forever 17, the conscience-stricken Cullen wants to compensate for his unnatural nature. He battles other vampires to save the lives of humans, and he practices “vegetarian” vampirism, imbibing the blood of animals rather than humans. Like his adoptive father, he even once studied medicine, though he has yet to complete his HMS degree. After warning his mortal love interest not to requite his affection, he tells her, in winsome anguish, “I don’t want to be a monster!”

Some fictional graduates don’t seem to mind being monsters. After graduating at the top of his class at HMS, Ted Grey, the protagonist of the 2008 movie *Pathology*, lands a spot at one of the nation’s most prestigious residency programs in pathology. There, in the opening lecture, he hears his new adviser declaring, “I like to think of the pathologist as offering a window to God”—words any fictional graduate might long to hear.

Attracted by his cold confidence and superior skills, his fellow residents lure Grey into joining their clique. He soon uncovers their secret—an after-hours morgue game of let’s-see-who-can-commit-the-perfect-murder. It doesn’t take long for him to join in their game of playing God by murdering those they

**AGAINST TYPE:** Edward Cullen, a vampire in the movie *Twilight*, fights against the monstrous characteristics of his fellow immortals, even to the point of battling other vampires. The task takes its toll and, one might speculate, may even have kept him from completing his medical studies at Harvard.





BECKER

**THE LESSER OF TWO EVILS:** Although the lead character in *Becker* (bottom center in the photo at left) is a School graduate who bedevils his colleagues on a daily basis, the fictional alumnus in *The Exorcist*, Damien Karras (below), must fight a more malevolent form of bedevilment.

term “irredeemable filth”—pedophiles, pimps, and murderers.

Eventually, though, Grey realizes his fellow residents aren't simply conducting vigilante killings; they're also murdering for sport. When Grey fails to save his fiancée from being slain, he proceeds to autopsy her killer—while the paralyzed perpetrator is still agonizingly alive.

### Extreme Measures

Not all the School's fictional graduates are arrogant, and not all play God. But most are extreme, if not in character, talent, or immortal status, then in storyline. Abbey Bartlet, a thoracic surgeon who's married to the U.S. president on *The West Wing*, faces an unusual predicament. For years she has been administering interferon beta-1b to her husband to keep his multiple sclerosis a secret from the nation. Only when he collapses does she reveal his illness to a member of the White House staff. Her decision to treat the serious illness of a family member clandestinely and without establishing a medical record—in egregious violation of several principles of medical ethics—leads her to give up her medical license for the duration of her time in the White House.

But Bartlet's storyline is mundane compared with the one Damien Karras must follow. Karras had become a Jesuit priest before attending HMS. Yet neither his spiritual calling nor his psychiatric training could have prepared him for his biggest challenge: curing a levitating, green-bisque-spewing prepubescent girl of her demonic possession.

In *The Exorcist*, Karras initially scoffs at the family's request for the ancient ritual. No one has believed in demonic possession, he assures the girl's mother, “since we learned about mental illness, paranoia, schizophrenia—all the things they taught me in Harvard.” Yet Karras soon realizes that his Harvard training is powerless in the face of a malevolence that causes rooms to turn frigid, furniture to shake violently, and a girl's head to rotate completely—and creakily—on her neck.

In the end, Karras taunts the demon into possessing *him* and then hurls himself down a long flight of stone steps, sacrificing his own life to save his patient.

Sadly, the HMS graduate lives to die another day. In *The Exorcist III: Legion*, a spawn of the original movie, we find Karras possessed by another evil spirit, escaped from his grave, and housed in a psychiatric hospital. Eventually he becomes implicated in his possessor's latest killing spree and is shot to death.



THE EXORCIST



## PATHOLOGY

**COLD CASE:** The protagonist of the movie *Pathology* seems to revel in being a monster, freely joining a game of playing God by murdering those he deems to be irredeemable.

### Be True to Your School

Other medical schools can claim fictional alumni, of course. Yale takes credit for psychiatrist Niles Crane, *Frasier*'s pretentious younger brother. Stanford graduated Cristina Yang, an ambitious surgeon on *Grey's Anatomy*; B. J. Hunnicutt, an easygoing surgeon on *M\*A\*S\*H*; and Bob Kelso, the callous chief of medicine on *Scrubs*. Tufts educated Jordan Cavanaugh, the grim-faced medical examiner on *Crossing Jordan*, and Jennifer Melfi, the long-suffering psychiatrist to the eponymous mobster on *The Sopranos*.

But HMS, whose fictional graduates have numbered at least two dozen in the past few decades, easily edges out even Johns Hopkins, its closest rival. Eric Foreman, the pensive neurologist on *House, MD*, graduated from Hopkins, as did Ellie Bartlet, the president's middle daughter on *The West Wing*, and Preston Burke and Erica Hahn, two hard-driving cardiothoracic surgeons on *Grey's Anatomy*.

Hopkins may not have Harvard's numbers, but it competes well in the realm of extreme character. Although not a graduate of the medical school, Hannibal Lecter—the infamous cannibal from *The Silence of the Lambs* who complements his liver entrées with fava beans

and a nice Chianti—trained at the Johns Hopkins Hospital.

But the Hopkins matriculant who should have attended Harvard instead is the curmudgeonly protagonist of *House*. Gregory House comes straight from HMS casting, with a distended ego and a self-anointed divinity. "You will trust my diagnosis," he tells an Orthodox Jew, the husband of a patient, "because in this temple, I am Dr. Yahweh."

To parse the Harvard-Hopkins screen rivalry, we turned to *The Simpsons*, a finely tuned cultural barometer that features a graduate of each school. Julius Hibbert, the Simpson family physician, earned his medical degree from Hopkins. A genial genius who giggles at disconcertingly inappropriate moments, Hibbert tends to offer dubious solutions to medical dilemmas. When Homer Simpson loses a thumb, for instance, Hibbert cheerfully suggests lopping off the other one for symmetry. To reduce his malpractice liability, he buys a T-shirt with the slogan "Do Not Resuscitate," muttering, "This could get me out of a lot of sticky situations."

How could Harvard possibly top such an eccentric character? With Eleanor Abernathy, better known as the Crazy Cat Lady. As a young woman with degrees from HMS and Yale Law School,

Abernathy had enjoyed two successful careers. In one flashback scene, while representing a client in court, she asks to be excused to deliver a baby. Exhaustion, however, has led to alcoholism, and as the years have passed Abernathy has gradually loosened her grip on reality. In one episode, a new medication allows her to regain lucidity; while rational, she can speak intelligently about health care reform. The placebo effect wears off, though, when she learns the pills are really Reese's Pieces.

Lisa Simpson, ever sympathetic to the downtrodden, films a *Kidz Newz* report in front of Abernathy's modest Springfield home. "People say she's crazy just because she has a few dozen cats," Lisa earnestly says into the microphone. "But can anyone who loves animals that much really be crazy?" The door slams open and Abernathy answers Lisa's question in her signature way: With flyaway gray hair and a snaggletoothed grimace, she lunges forward, shrieking incoherently and hurling first a black cat, then a tabby, as a mess of yowling, panicked felines squirm in her arms and gird themselves for flight.

### Natural Selection

Where on screen, we wondered, could we find normal graduates of the School? Where were the thoughtful and caring physicians who didn't autopsy aliens, dissect their colleagues, or catapult kitties? For guidance we turned to a real-life graduate who works in Hollywood. Neal Baer '96 had left his position as a writer and executive producer of *ER*



## To parse the Harvard-Hopkins screen rivalry, we turned to *The Simpsons*, a finely tuned cultural barometer that features a graduate of each school.

years earlier, but as executive producer of *Law & Order: Special Victims Unit*, he still had two fictional doctors under his creative control. So we asked him: What medical schools had they attended?

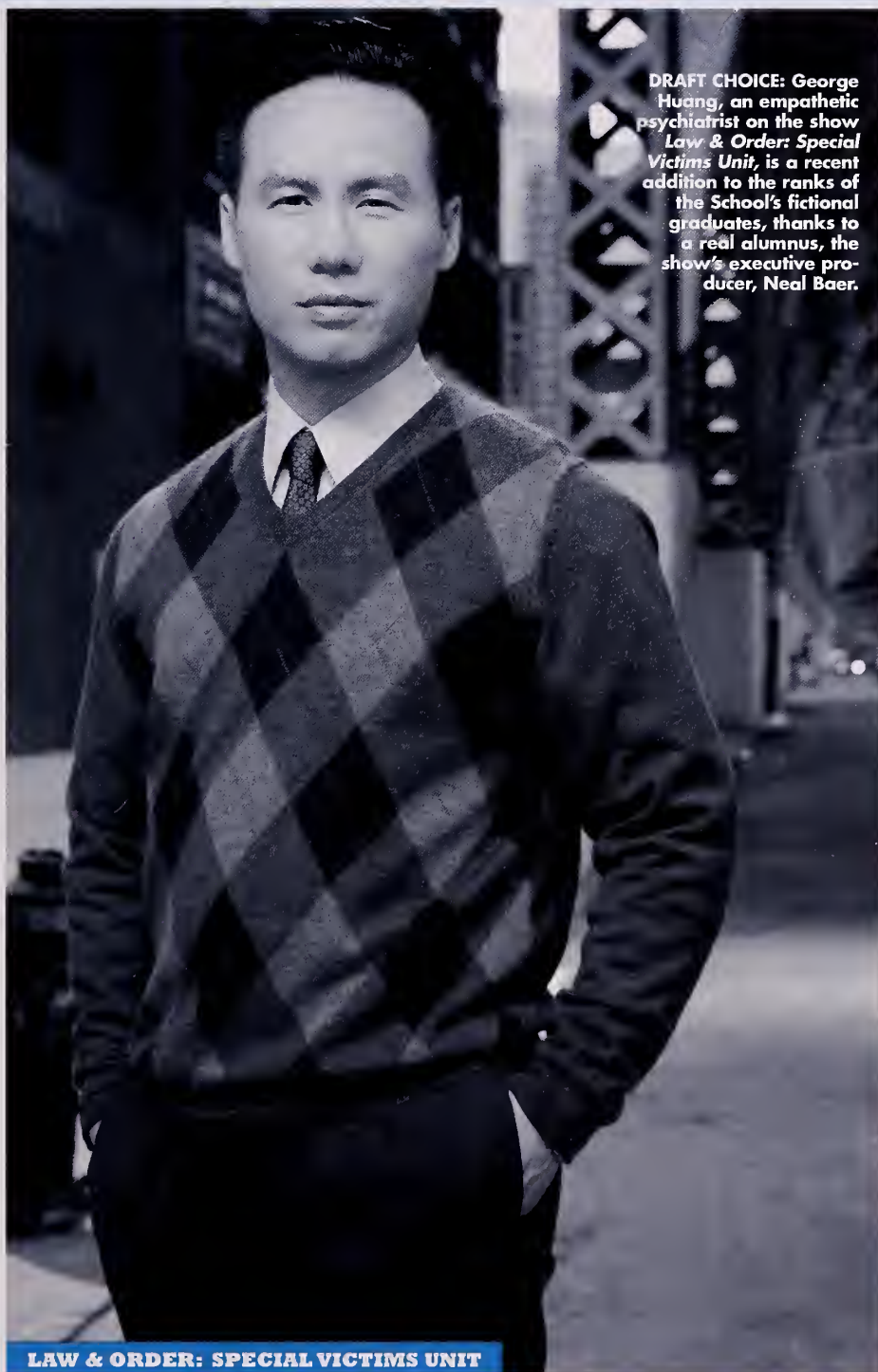
"Well," he said, "I never really thought about it. Um, I guess Columbia and Cornell?"

We dutifully jotted down his answer, but when we reported back to members of the *Bulletin's* Editorial Board, they weren't impressed by our journalistic objectivity. Go back to him, they urged. Claim those doctors for Harvard!

So at our next opportunity we asked Baer: Why not Harvard? "Fine," he answered, without a hint of the peevishness so characteristic of his screen counterparts. And with that word, the School gained two new fictional graduates, doctors it could be proud to claim: George Huang, an insightful and empathetic psychiatrist, and Melinda Warner, a tough and yet not flinty medical examiner.

The School's list of fictional graduates only promises to grow. One Harvard hopeful can be found in a movie now in development; the screenplay has been written and optioned, and actor Orlando Bloom has been discussed as a possible lead. Based on a short story by Edgar Allan Poe, *Eliza Graves* takes place in a remote psychiatric hospital. A recent HMS graduate accepts a job there, not realizing that the patients have staged a coup and are now running the hospital. Eventually the plot twists to reveal that the young man is himself a former patient—perhaps even an escaped one?—of another psychiatric hospital. We can only hope the movie wraps before Hopkins recruits him. ■

Paula Byron is editor of the Harvard Medical Alumni Bulletin. For a list of fictional HMS graduates in movies and on television, visit <http://alumnibulletin.med.harvard.edu/bulletin/spring2009/screenmapping.php>.



**DRAFT CHOICE:** George Huang, an empathetic psychiatrist on the show *Law & Order: Special Victims Unit*, is a recent addition to the ranks of the School's fictional graduates, thanks to a real alumnus, the show's executive producer, Neal Baer.

**LAW & ORDER: SPECIAL VICTIMS UNIT**



## The Curmudgeon

### GREGORY HOUSE

*House, MD*

**Specialties:** Infectious disease and nephrology

**Bedside manner:** Misanthropic, juvenile, ardently offensive

**Teachable moment:** Convinced that the star of his favorite soap opera has a medical condition, he kidnaps the actor, runs clinical tests, and eventually, while watching the actor grimoze through a fake gin and tonic on the set, diagnoses him with quinine allergy.

**Lesson drawn:** The devil is in the details.

**Quote:** "Treating illnesses is why we become doctors. Treating patients is what makes most doctors miserable."

## The Narcissist

### MEREDITH GREY

*Grey's Anatomy*

**Specialty:** Surgery

**Bedside Manner:** Self-absorbed, distracted, perennially gloomy

**Teachable moment:** She almost draws while treating the victims of a ferry crash, and her near-death experience spurs her to enter psychotherapy to confront her "dork and twisty" nature.

**Lesson drawn:** Physician, heal thyself.

**Quote:** "I've heard that it's possible to grow up; I've just never met anyone who's actually done it."

Which Hollywood screen doctors should be your role models?

# WATCH & LEARN

## The Innovator

### FREDERICK FRANKENSTEIN

*Young Frankenstein*



**Specialty:** Neurosurgery

**Bedside manner:** Neurotic, risk taking, animatedly pioneering

**Teachable moment:** In a groundbreaking procedure, he transfers some of his calm and intellect to his oversized monster—and unexpectedly reaps a sizable gain in return.

**Lesson drawn:** Devotion to science can bring hidden benefits.

**Quote:** "Hearts and kidneys are Tinkertoys!"

## The Civilizer

### MICHAELA QUINN

*Dr. Quinn, Medicine Woman*



**Specialty:** Frontier medicine

**Bedside manner:** Nurturing, pacifying, disarmingly plucky

**Teachable moment:** When her new employer, who was expecting a male doctor, tries to return her to Boston, she refuses to leave Colorado Springs and goes on to treat arthritis, diagnose an arrhythmia, deliver a baby, cure an infection, and perform an emergency tracheotomy—all in the pilot episode.

**Lesson drawn:** Hold your ground.

**Quote:** "I've dedicated my life to repairing the damage that men like you bring on this world and frankly, [General] Custer, I don't want any more of your business."



## The Cynic



### HAWKEYE PIERCE, *M\*A\*S\*H*

**Specialty:** Surgery

**Beside manner:** Wisecracking, mocking, endearingly puckish

**Teachable moment:** He gleefully invents a fictional Army captain to authorize the donation of medical supplies to a local orphanage; when he "realizes" the Army hasn't paid the captain in over a year, he has that back pay donated to the orphanage as well.

**Lesson drawn:** Survive by your wit—if not your wits.

**Quote:** "I'm not here for you to admire. I'm here to pull bodies out of a sausage grinder, if possible without going crazy."

## The Moralist

### STEPHEN FRANKLIN

*Babylon 5*

**Specialty:** Galactic medicine

**Beside manner:** Principled, open minded, refreshingly xenophobic

**Teachable moment:** Despite the threat of arrest, he refuses to release autopsy notes that would enable EarthForce to develop biological weapons against the Minbari, a humanoid alien race.

**Lesson drawn:** Do the right thing, even if it's alien to your nature.

**Quote:** "Take responsibility for your actions, for crying out loud! You go in there and you fight for what matters to you. Don't just walk away because it's easier!"

## The Competitor



### CRISTINA YANG, *Grey's Anatomy*

**Specialty:** Surgery

**Beside manner:** Aggressive, ambitious, unerringly tactless

**Teachable moment:** She steals another doctor's intriguing case—a psychiatric patient whose massively swollen abdomen leads him to insist he's pregnant—only to be thwarted by a nurse she has treated contemptuously.

**Lesson drawn:** Be kind to everyone, especially nurses.

**Quote:** "Colleagues aren't friends! They're competitors."

## The Elitist

### FRASIER CRANE

*Frasier*

**Specialty:** Psychiatry

**Beside manner:** Pompous, bombastic, desperately insecure

**Teachable moment:** It's Frasier Crane Day and he's frantic about missing a public rally in his honor until a cab driver's quiet recitation of real problems distracts him from his insatiable ego.

**Lesson drawn:** It's not all about you.

**Quote:** "As we speak, hundreds of viral Visigaths are hurling themselves over the battlements of my immune system, laying waste to my.... Oh, dear God, you see how weak I am? I can't even finish a simple Visigath metaphor."

## The Luddite



### DR. EVIL, *Austin Powers*

**Specialty:** Global havoc

**Beside manner:** Outmoded, canniving, cheerfully malevolent

**Teachable moment:** After being cryogenically preserved for three decades, he threatens to hold the world hostage for one million dollars, sparking a round of stifled laughter among his criminal cohorts.

**Lesson drawn:** Aim high.

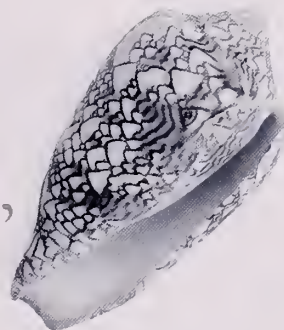
**Quote:** "It's Dr. Evil. I didn't spend six years in Evil Medical School to be called mister!"







from sharks to snails,  
bears to snakes,  
frogs to bacteria,  
Earth's biodiversity  
holds medical treasures  
waiting to be  
discovered—and crying  
out to be conserved



# DESIGN FOR

IT'S OFTEN THE UGLY AND THE SMALL THAT SUSTAIN LIFE.

Consider, for example, the gastric brooding frog. Native to Australia, both the northern and southern branches of this frog species are small—about the length of a jumbo paperclip—and with large protruding eyes, flattened heads, slimy skins, and dull or dun colorations, not quite candidates for poster amphibian.

And then there's its name, painfully practical: A female gastric brooding frog swallows fertilized eggs and hatches them in her stomach. It's a curious process but, from a medical standpoint, a fascinating one. After the eggs develop into tadpoles—and before the mother frog spews them forth to develop into adults in the outside world—the brooding tadpoles apparently secrete a substance or substances that inhibit the mother frog's digestive process, thus turning an inhospitable environment hospitable. Those substances intrigue medical researchers.

BY ERIC CHIVIAN

**HARD TO SWALLOW:** The young of the now-extinct gastric brooding frog gestated in the stomach of the mother frog. As the tadpoles developed, they secreted a substance that stemmed the mother's digestive process—and ensured them a safe nursery.



Could they help prevent, perhaps even treat, peptic ulcer disease, a condition that affects more than 4 million people in the United States alone? The question is a tantalizing one.

And one never to be answered, for the gastric brooding frog, abundant in the early 1970s, disappeared several years later. For more than a decade now, it has officially been listed as extinct.

The reasons for this disappearance could be several: climate change, destruction of the frogs' forest and stream habitats, infection by a lethal fungus. But the results are clear. A small creature is gone because of human activity, the diversity of species inhabiting our planet has been lessened, and knowledge that could have helped doctors alleviate suffering has vanished for all time.

About a decade ago, I became part of a scientific effort to investigate the potential consequences to human health from the loss of species such as the gastric

brooding frog. Together with colleagues from Harvard Medical School's Center for Health and the Global Environment, the International Union for Conservation of Nature (IUCN), and three agencies of the United Nations—the Environment Programme, the Development Programme, and the Secretariat of the Convention on Biological Diversity—we gathered and sifted data on the well-being of humans and our planet.

We found the two to be inextricably entwined. Our findings underscored the need to preserve the planet's biodiversity—its ecosystems, species, populations, and gene pools—if we are to preserve human health.

### Recycling Center

Although the gastric brooding frog can no longer benefit from improvements we make as active stewards of this planet, other animals can. The polar bear is one

such animal. This magnificent mammal is one of nine bear species threatened with extinction, according to the IUCN. The threats come from habitat destruction, overhunting, and, for the polar bear in particular, exposure to persistent organic pollutants and climate change. Increasing temperatures are thinning the Arctic ice, a condition that compromises the bears' ability to hunt seals, their primary food source. In fact, during the bears' peak hunting season, seals are the first, and often only, item on the menu. Dining on seal blubber allows a polar bear to build a layer of fat several inches thick directly beneath its skin.

Just when this steady diet of seal blubber leads to a state of obesity, the bears begin a several-month period of fasting. Given their obesity, we would expect polar bears to develop type 2 diabetes mellitus, as we and all other mammals tend to do. In fact, their cells do show some insulin resistance. Yet polar bears

PHOTOS: JOHN WOMBEY/AUSCARE INTERNATIONAL (FROG); SUSANNE MILLER/U.S. FISH AND WILDLIFE SERVICE (BEARS)



do not develop the disease. Instead, their metabolism of glucose and fat and their production of insulin adjust to meet their changed circumstances. Insight into how polar bears accomplish these metabolic feats could well inform how we treat, and maybe even prevent, type 2 diabetes, a disorder that has reached epidemic proportions in the United States.

The promise that understanding polar bear physiology holds for humans with diabetes expands when we examine the physiologies of other bear groups. Research conducted during the past quarter century on hibernating black bears, for example, has shown that during their three-to-six-month period of inactivity they do not lose bone mass, nor do they urinate or defecate. By contrast, humans who are bedridden for five months lose one-quarter to one-third of

an inability to excrete  
urinary wastes for  
several days poisons and  
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person; how is it that  
bears survive unharmed?

their bone mass. More dramatically, an inability to excrete urinary wastes for several days poisons and eventually kills a person. How is it that bears survive similar circumstances unharmed?

They recycle. Calcium released by the bones cycles back into bone. Urine is reabsorbed by the bladder and returned to the bloodstream; the reabsorbed urea

is used as a building block to form new amino acids, which assemble into new proteins; and free fatty acids are returned to fatty tissue, not broken down to release ketone bodies as their end product. The overall result of this remarkable internal chemistry is that, during hibernation, bears lose body fat, increase lean body mass, and maintain

**ON THIN ICE:** Polar bears are threatened with extinction as a result of climate changes that hasten the loss of Arctic sea ice, the frozen habitat upon which the bears depend.



# our failure to recognize the link between our health and that of the planet's species is at the core of the global environmental crisis

bone integrity and healthy renal function. To add to that remarkable litany, females that are pregnant when they start their period of fasting and hibernation give birth and provide nutritious, high-fat milk to growing offspring.

Even if our study of hibernating bears led only to an effective treatment for osteoporosis, a disease that currently afflicts more than 28 million people in the United States alone, protection of these animals would be worthwhile. But research on bears also has shown us that their metabolic accomplishments could inform our treatment of such medical conditions as obesity, diabetes, chronic malnutrition, anorexia nervosa, and atherosclerosis.

## Shell Gains

It's not simply the *promise* of medical advances that may be found in nature. Cone snails—marine mollusks that live in the soft bottoms of mangroves and in coral reefs—have delivered on the promise. Each of the world's estimated 500 to 700 cone snail species is believed to produce between 100 and 200 distinct peptide toxins. The snails defend themselves and paralyze their prey—other mollusks, worms, and fish—with these toxins, delivering the poisons through a hollow, harpoon-like tooth.

The total number of toxins produced by this one genus of snails is remarkable—50,000 to 140,000, compared with only about 10,000 alkaloids that have been identified in all known plants. Pit vipers and other poisonous animals taken together produce only a handful of different poisons. But cone-snail toxins,

known as conotoxins, also are exceptional in that each binds with such potency and extreme selectivity to one of an enormous array of receptor sites. This discriminating ability has made conotoxins a must-have for biomedical research and a rich resource for the development of new medicines.

Conotoxins have, for example, helped scientists characterize certain of the subtypes of nicotinic acetylcholine receptors found in skeletal muscle, in the brain, and in mammalian heart muscles, where they have contributed to our understanding of the mechanisms that control heart rate and contractility. Other conotoxins have allowed researchers to identify calcium, potassium, and sodium ion channel subtypes, advancing our knowledge of the toxins' fundamental molecular units.

These toxins may also prove useful in diagnosing early cases of some elusive and stubborn cancers, like small-cell carcinomas of the lung, as they can help identify circulating antibodies formed in response to certain cancers, such as those that cause the autoimmune neurological disease Lambert-Eaton myasthenic syndrome.

These contributions may seem considerable, but they likely represent a mere fraction of the biomedical treasures cone snails may offer. To date, less than 1 percent of conotoxins have been defined and only a small subset of this group has been analyzed for biological activity. From these few efforts, however, several potential new medicines have been identified.

One, a painkiller called ziconotide, has been shown to be a thousand times more potent than morphine. Unlike morphine and other opiates, however, ziconotide

leads neither to tolerance nor addiction. In 2004, the U.S. Food and Drug Administration approved the use of this compound for the management of severe chronic pain in patients who no longer respond to opiates.

Another toxin that blocks a type of neurotransmitter receptor called the NMDA receptor has been shown to protect neurons from cell death in situations in which circulation is inadequate, such as during strokes and head injuries. Other conotoxins that block NMDA receptors could open the way to new antiepileptic treatments.

The potential pharmacopoeia that cone snails offer humans understandably makes the snails sought-after items for biomedical research. But such popularity comes at a cost. Harvesting the snails for biomedical research, a practice that tends to be carefully controlled, may simply be contributing a new twist to the overhunting these snails have long suffered at the hands of another set of collectors, those captivated by the beauty and variety of the snails' shell patterns.

The snails' habitats also face environmental insults. An estimated 20 percent of the world's coral reefs are so damaged they are unlikely to recover; another 50 percent are at risk of collapse.

Carbon dioxide, released into the atmosphere during the burning of fossil fuels, threatens reefs in two ways: by dissolving in seawater, thereby increasing its acidity and inhibiting the calcification of the corals that make up the reefs, and by causing sea surface warming, which affects the viability of algae that provide the corals with nutrients. Mangroves too are being threatened, uprooted for wood, development, and aquaculture and devastated by natural catastrophes such as tsunamis.

An awareness of these threats—and a willingness to act to stem them—can help conserve this population; countries like Australia have recently established restrictions on the collection and trade of cone snails. Yet many countries in Southeast Asia, where more than half the world's cone snail species are found, have no such controls.



## You Can't Bottle Sunshine

It may seem odd to link the existence of a tiny frog that once lived on a single continent, a bear that forages in the frigid far north, and a snail that inhabits reefs and mangroves found only in tropical seas to that of humans populating the far reaches of the world. But such links are real.

With the loss of animal, plant, and microbial species, we lose not only new medicines and vital models for medical research, but also the contributions those species make to ecosystems. Such losses

disrupt the interdependent webs of life that pollinate crops, convert wastes and dead organisms into nutrients for the soils and oceans, hold infectious diseases in check, and perform a host of other essential services that spark and sustain the lives of all organisms on Earth.

Our failure to recognize the link between our health and that of the planet's species and ecosystems is at the core of the global environmental crisis. We delude ourselves—dangerously so—if we think that taking action to preserve the natural world is simply a matter of

choice. It is not a choice; it is a necessity. Our health and our lives depend on it. ■

*Eric Chivian '68 is founder and director of the Center for Health and the Global Environment and an assistant clinical professor of psychiatry at Harvard Medical School. In 1980, he co-founded International Physicians for the Prevention of Nuclear War, recipient of the 1985 Nobel Peace Prize. In 2008, Time magazine named him one of the 100 most influential people in the world. Along with Aaron Bernstein, he is the editor of Sustaining Life: How Human Health Depends on Biodiversity (Oxford University Press, 2008).*

**CONE HOME:** Medical researchers seeking to develop new drugs now prize the venoms that the more than 500 species of cone snails produce, just as collectors have long sought the snails' patterned shells.



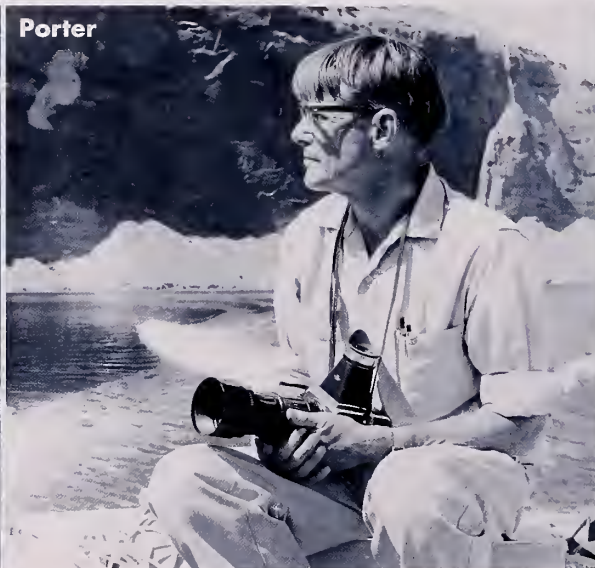


# Doctor Who?

IN A RANT ON THE FOLLY OF PHARMACEUTICALS, OLIVER WENDELL Holmes, Sr., Class of 1836, once declared, “I firmly believe that if the whole *materia medica* could be sunk to the bottom of the sea, it would be all the better for mankind—and all the worse for the fishes.” Holmes was not the only Harvard doctor to be a quotable notable. Can you match the statements on the next pages with their sources? (Keep in mind that several of these Harvard Medical School graduates and faculty members are quoted more than once.)



Holmes



Porter



Hamilton





**Albright**

**1.**

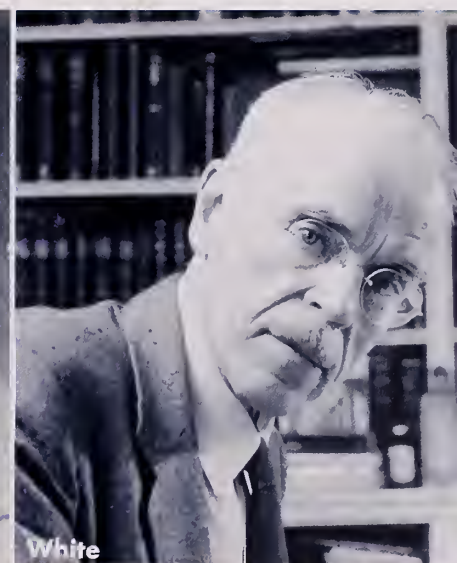
“If you don’t fall down, you aren’t trying hard enough, you aren’t trying to do things that are hard enough for you. So, falling down is part of learning for whatever you do....”



**Weil**



**Wright**



**White**

## Match Game

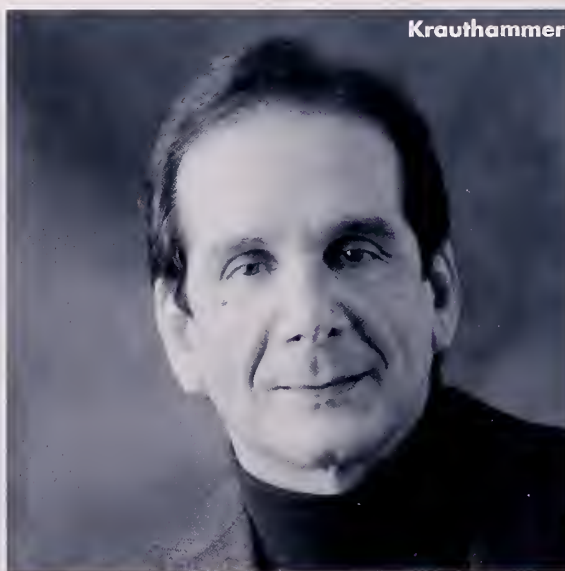
2. The great secret, known to internists and learned early by internists' wives, but still hidden from the general public, is that most things get better by themselves. Most things, in fact, are better by morning.
3. An expert is a man who tells you a simple thing in a confused way in such a fashion as to make you think the confusion is your own fault.
4. When you have to make a choice and don't make it, that is in itself a choice.
5. A physician is obligated to consider more than a diseased organ, more even than the whole man—he must view the man in his world.
6. A segregated hospital makes the white person feel superior and the black person feel inferior. It sets the black person apart from all other citizens as being a different kind of citizen and a different kind of medical student and physician, which you know and we know is not the case. What the Negro physician needs is equal opportunity for training and practice—no more, no less.
7. Drugs are here to stay. History teaches that it is vain to hope that drugs will ever disappear and that all efforts to eliminate them from society are doomed to failure.
8. Every now and then a man's mind is stretched by a new idea or sensation, and never shrinks back to its former dimensions.
9. We all live every day in virtual environments, defined by our ideas.
10. I can play hardball as well as anybody. That's what I did, cut people's hearts out.
11. Sometimes you can tell a large story with a tiny subject.
12. One hears of the mechanical equivalent of heat. What we now need to discover in the social realm is the moral equivalent of war: something heroic that will speak to men as universally as war does, and yet will be as compatible with their spiritual selves as war has proved itself to be incompatible.
13. Man can't help hoping even if he is a scientist. He can only hope more accurately.
14. In the Middle Ages, people took potions for their ailments. In the nineteenth century they took snake oil. Citizens of today's shiny, technological age are too modern for that. They take antioxidants and extract of cactus instead.
15. Leaders often find themselves temporarily alone.

### ANSWER KEY

1. a; 2. m; 3. b; 4. i; 5. d; 6. g; 7. o; 8. h; 9. c; 10. e; 11. f; 12. i; 13. k; 14. j; 15. f; 16. h; 17. n; 18. m; 19. i; 20. g; 21. p; 22. m



James



Krauthammer



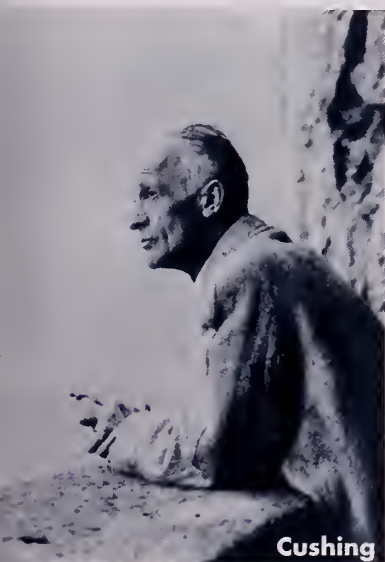
Frist



# Doctors' Notes

16. The state should, I think, be called "Anaesthesia." This signifies insensibility....
17. Tobacco is a filthy weed,  
That from the devil doth proceed.  
It drains your purse, it burns your clothes,  
And makes a chimney of your nose.
18. Aloft, floating free beneath the moist, gleaming membrane of bright blue sky, is the rising earth, the only exuberant thing in this part of the cosmos.
19. First, you know, a new theory is attacked as absurd; then it is admitted to be true, but obvious and insignificant; finally it is seen to be so important that its adversaries claim that they themselves discovered it.
20. Yes, I am the first woman on the Harvard faculty—but not the first one who should have been appointed!
21. A vigorous five-mile walk will do more good for an unhappy but otherwise healthy adult than all the medicine and psychology in the world.
22. Ants are so much like human beings as to be an embarrassment. They farm fungi, raise aphids as livestock, launch armies into war, use chemical sprays to alarm and confuse enemies, capture slaves, engage in child labor, exchange information ceaselessly. They do everything but watch television.

Fred R. Shapiro is editor of *The Yale Book of Quotations* (Yale University Press, 2006).



- a. **Tenley Albright '61**, surgeon and U.S. Olympic gold medalist in figure skating, 1956
- b. **William B. Castle '21**, HMS professor of medicine, 1924–1968, and a founder of experimental hematolgy
- c. **Michael Crichton '69**, writer for film and television; film director and producer; author of nonfiction works; and novelist whose works, such as *The Andromeda Strain* and *Jurassic Park*, were often made into movies
- d. **Harvey Cushing, Class of 1895**, HMS professor of surgery, 1912–1932; father of neurosurgery; and medical historian
- e. **William Frist '78**, cardiologist and U.S. Senate Majority Leader, 2003–2007
- f. **Ernest Gruening, Class of 1912**, journalist; U.S. senator, 1959–1969; territorial governor of Alaska, 1939–1953
- g. **Alice Hamilton**, HMS assistant professor of industrial medicine, 1919–1935, and founder of U.S. industrial toxicology
- h. **Oliver Wendell Holmes, Sr., Class of 1836**, HMS professor of anatomy and physiology, 1847–1882; HMS dean, 1847–1853; writer and poet
- i. **William James, Class of 1869**, psychologist and philosopher
- j. **Charles Krauthammer '75**, Pulitzer Prize-winning columnist who writes about policy and politics
- k. **Karl A. Menninger, Class of 1917**, psychiatrist, philanthropist, and author
- l. **Eliot Porter '29**, celebrated nature photographer
- m. **Lewis Thomas '37**, dean of New York University School of Medicine, 1954–1969; dean of the Yale School of Medicine, 1969–1972; president of Memorial Sloan-Kettering Institute, 1973–1983; poet and essayist well known for his many books, including *The Lives of a Cell: Notes of a Biologist*
- n. **Benjamin Waterhouse**, one of the first faculty members appointed to HMS, 1782; first Hersey Professor of Theory and Practice of Physic at HMS, 1783–1812; scientist; and writer
- o. **Andrew Weil '68**, author; entrepreneur; and practitioner, teacher, and advocate of integrative medicine
- p. **Paul Dudley White, Class of 1911**, pioneering cardiologist
- q. **Louis Tompkins Wright, Class of 1915**, surgeon and the first black chair of the Board of Directors of NAACP, the National Association for the Advancement of Colored People, 1934–1953

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**BEST IN SHOW:** Harvard Medical School can boast dozens of fictional graduates on screens large and small. Pictured, from left, are alumni Abbey Bartlet from *The West Wing*, Stephen Franklin from *Babylon 5*, and Frasier Crane from *Frasier*.

